The PHOTOFACT Servicer

SET 422 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ NOV. 15, 1958

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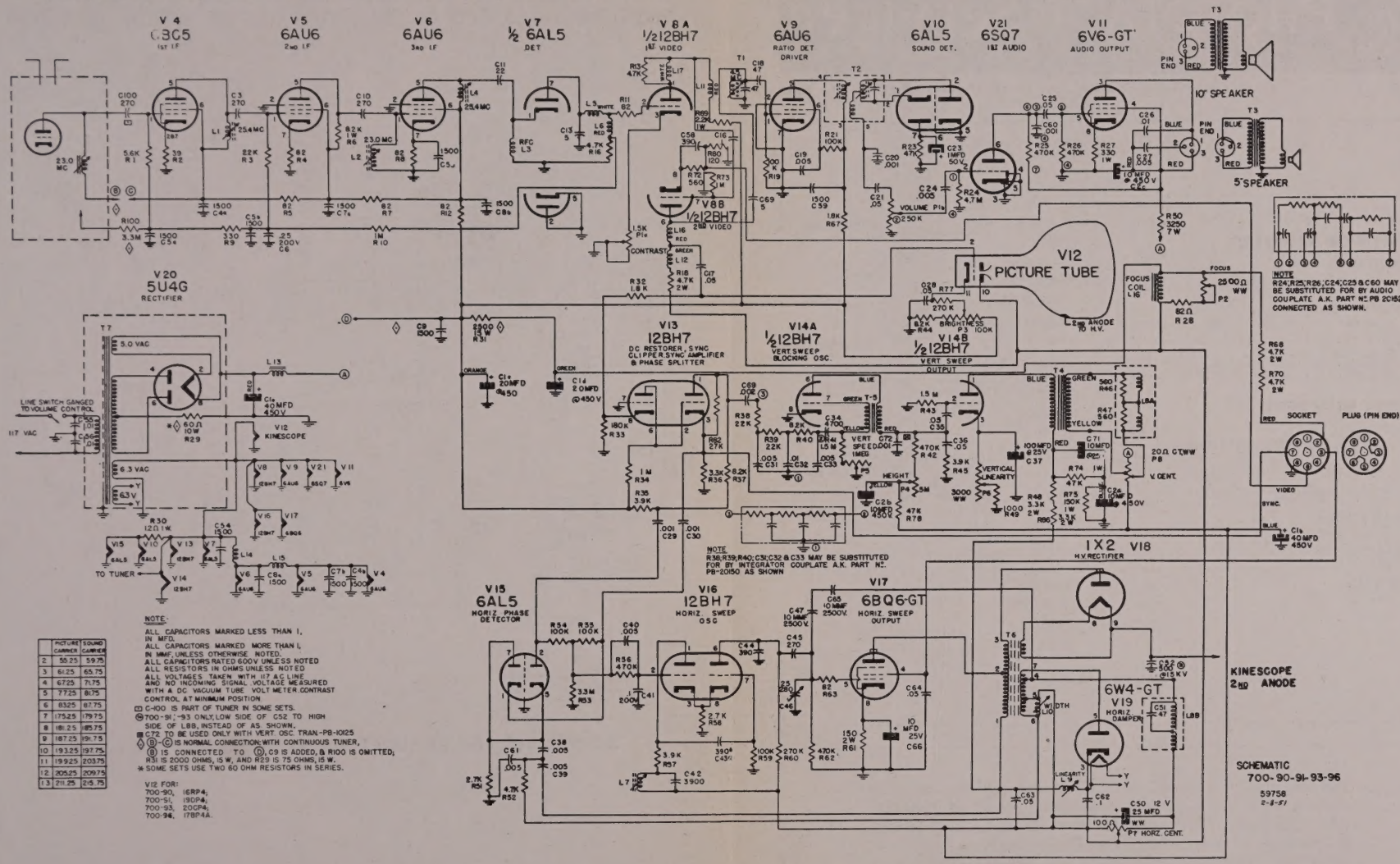
The service information in this Servicer provides data on models which we have been unable to present in PHOTOFACT Folders. The receivers are not in current production; a requirement for PHOTOFACT coverage, and we are therefore presenting schematics and supplementary data that will be of assistance when servicing these models.

FIRESTONE 13-G-53, CODE No. 105-1-70090 13-G-55, CODE 105-1-70093


V4 6BC5 1ST I.F.
V5 6AU6 2ND I.F.
V6 6AU6 3RD I.F.
V7 ½ 6AL5 DET
V8A ½12BH7 1ST VIDEO
V8B ½12BH7 2ND VIDEO
V9 6AU6 RATIO DET DRIVER
V10 6AL5 SOUND DET.
V21 6SQ7 1ST AUDIO
V11 6V6-GT AUDIO OUTPUT
V20 5U4G RECTIFIER
V12 PICTURE TUBE
V13 12BH7 DC RESTORER, SYNC CLIPPER, SYNC AMPLIFIER & PHASE SPLITTER
V14A ½12BH7 VERT SWEEP BLOCKING OSC.
V14B ½12BH7 VERT SWEEP OUTPUT
V15 6AL5 HORIZ. PHASE DETECTOR
V16 12BH7 HORIZ. SWEEP OSC
V17 6BQ6-GT HORIZ SWEEP OUTPUT
V18 1X2 H.V. RECTIFIER
V19 6W4-GT HORIZ. DAMPER
10" SPEAKER
5" SPEAKER
KINESCOPE 2ND ANODE
SCHEMATIC 700-90-91-93-96
59758 2-8-51

	PICTURE CARRIER	SOUND CARRIER
2	55.25	59.75
3	61.25	65.75
4	67.25	71.75
5	77.25	81.75
6	83.25	87.75
7	175.25	179.75
8	181.25	185.75
9	187.25	191.75
10	193.25	197.75
11	199.25	203.75
12	205.25	209.75
13	211.25	215.75

NOTE:
ALL CAPACITORS MARKED LESS THAN 1, IN MFD.
ALL CAPACITORS MARKED MORE THAN 1, IN MMF, UNLESS OTHERWISE NOTED.
ALL CAPACITORS RATED 600V UNLESS NOTED
ALL RESISTORS IN OHMS UNLESS NOTED
ALL VOLTAGES TAKEN WITH 117 A.C. LINE AND NO INCOMING SIGNAL. VOLTAGE MEASURED WITH A DC VACUUM TUBE VOLT METER. CONTRAST CONTROL AT MINIMUM POSITION.
C-100 IS PART OF TUNER IN SOME SETS.
Ⓔ 700-91, -93 ONLY, LOW SIDE OF C52 TO HIGH SIDE OF L88, INSTEAD OF AS SHOWN.
C72 TO BE USED ONLY WITH VERT. OSC. TRAN-PB-10125
Ⓐ Ⓑ Ⓒ IS NORMAL CONNECTION; WITH CONTINUOUS TUNER, Ⓑ IS CONNECTED TO Ⓓ, C9 IS ADDED, & R100 IS OMITTED; R31 IS 2000 OHMS, 15 W, AND R29 IS 75 OHMS, 15 W.
* SOME SETS USE TWO 60 OHM RESISTORS IN SERIES.

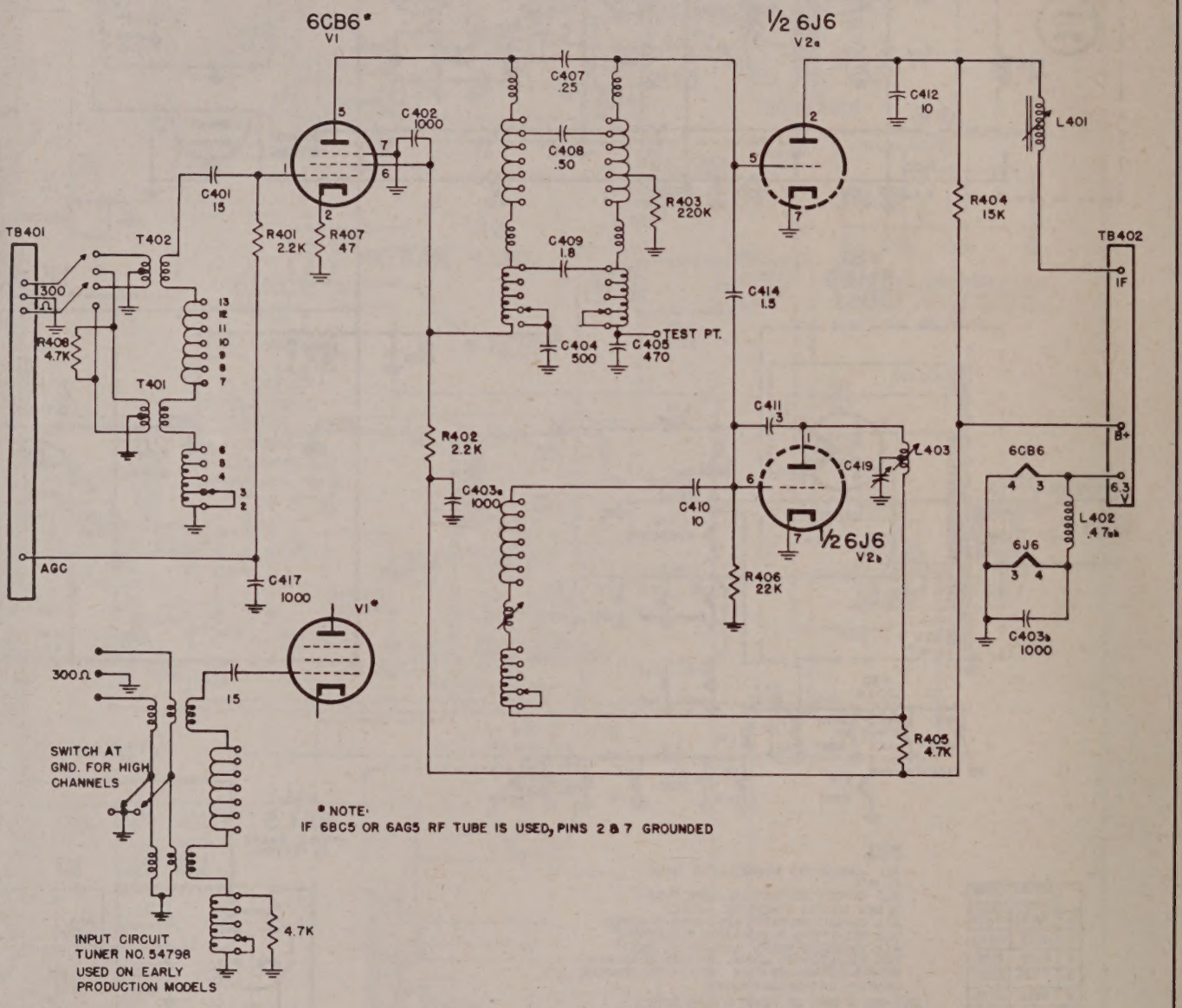
V12 FOR:
700-90, 16RP4;
700-91, 19DP4,
700-93, 20DP4;
700-94, 17BP4A.

NOTE
R24, R25, R26, C24, C25 & C60 MAY BE SUBSTITUTED FOR BY AUDIO COUPLATE A.K. PART NO. PB 20152 CONNECTED AS SHOWN.

NOTE
R38, R39, R40, C31, C32 & C33 MAY BE SUBSTITUTED FOR BY INTEGRATOR COUPLATE A.K. PART NO. PB-20150 AS SHOWN

SCHEMATIC DIAGRAM COURTESY FIRESTONE TIRE & RUBBER CO.

FIRESTONE 13-G-53, CODE No. 105-1-70090 13-G-55, CODE No. 105-1-70093



SCHEMATIC FOR RF TUNER NO. 54946, Model TT3-X

SCHEMATIC DIAGRAM COURTESY FIRESTONE TIRE & RUBBER CO.

PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

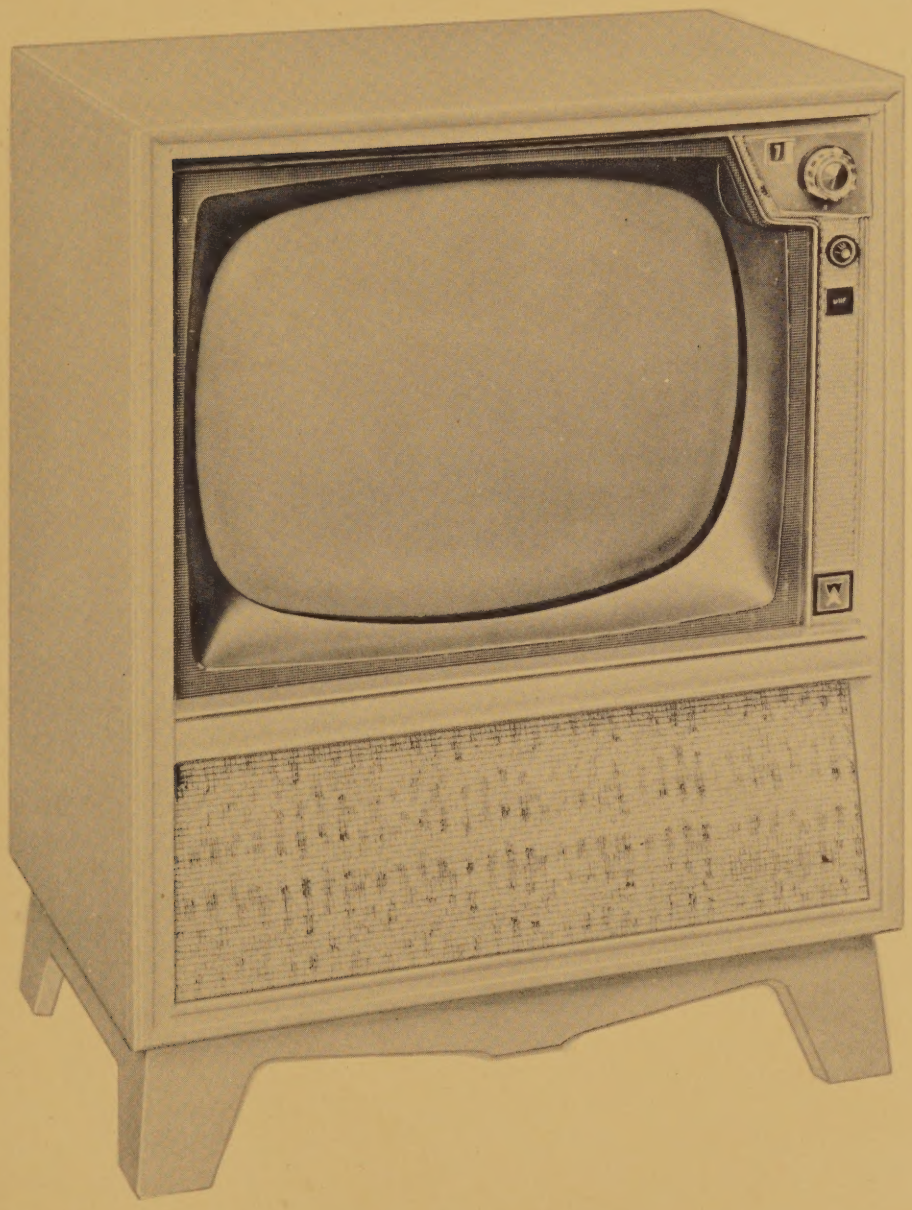
AIRLINE MODELS WG-4043A, WG-4053A, WG-5043A, WG-5053A

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

AIRLINE MODELS WG-4043A, WG-4053A, WG-5043A, WG-5053A



AIRLINE MODELS WG-4043A, WG-4053A, WG-5043A, WG-5053A

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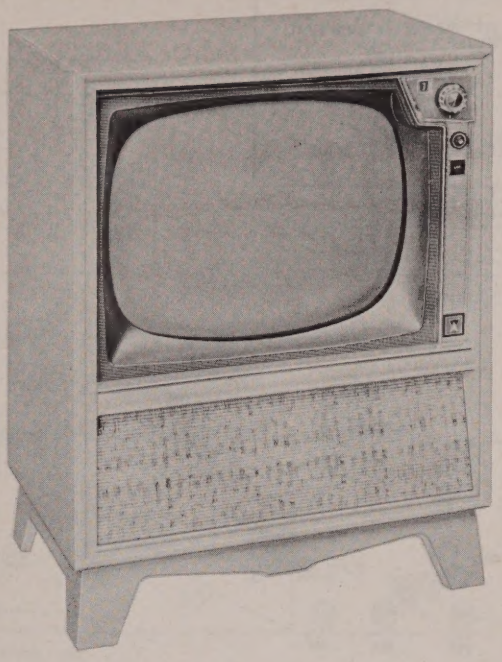
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

PHOTOFACT* Folder

AIRLINE MODELS WG-4043A, WG-4053A, WG-5043A, WG-5053A

AIRLINE MODELS WG-4043A, WG-4053A, WG-5043A, WG-5053A

DISASSEMBLY INSTRUCTIONS



CHASSIS REMOVAL

1. Remove 4 push-on type knobs from the front. Remove 2 wood screws holding the knob escutcheon and remove remaining 4 knobs.
2. Remove 5 wood screws holding the rear cover. Remove the rear cover.
3. Loosen 2 wood screws holding the antenna terminal board.
4. Remove speaker leads.
5. Remove 2 wood screws holding the top chassis braces.
6. Remove 4 chassis bolts from the bottom.
7. Remove the chassis.

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

TRADE NAME	Airline MODELS WG-4043A, WG-4053A, WG-5043A, WG-5053A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Avenue, Chicago, Illinois
TYPE SET	Television Receiver
TUBES	Eighteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 155 Watts, 1.4 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, as the channel selector is rotated. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 5 wood screws from the trim strip at the top of the safety glass. Tilt the glass out at the top and lift up to remove.

SPECIAL ADJUSTMENTS

A. Focus
Adjust the beam alignment magnet on the neck of the picture tube for best focus.

B. Range
Observe the picture and advance the range control to a point where the picture distorts or a buzz is heard in the sound. Back off from this setting until the picture becomes stable with no noise in the sound.

C. Sync Stab Adjustment
Tune in the strongest TV station operating in the area. Adjust controls for a normal picture. Adjust the sync stab control clockwise until bending or jitter occurs. Back off from this setting until the picture is stable. Check operation on all channels operating in the area and readjust if necessary.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Set the horizontal hold at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate audio detector buzz, adjust the buzz control for MINIMUM buzz and maximum sound. (For location, see tube placement chart).

FUSE DEVICE

A circuit breaker is used for LV power supply protection and may be reset by depressing the reset button. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

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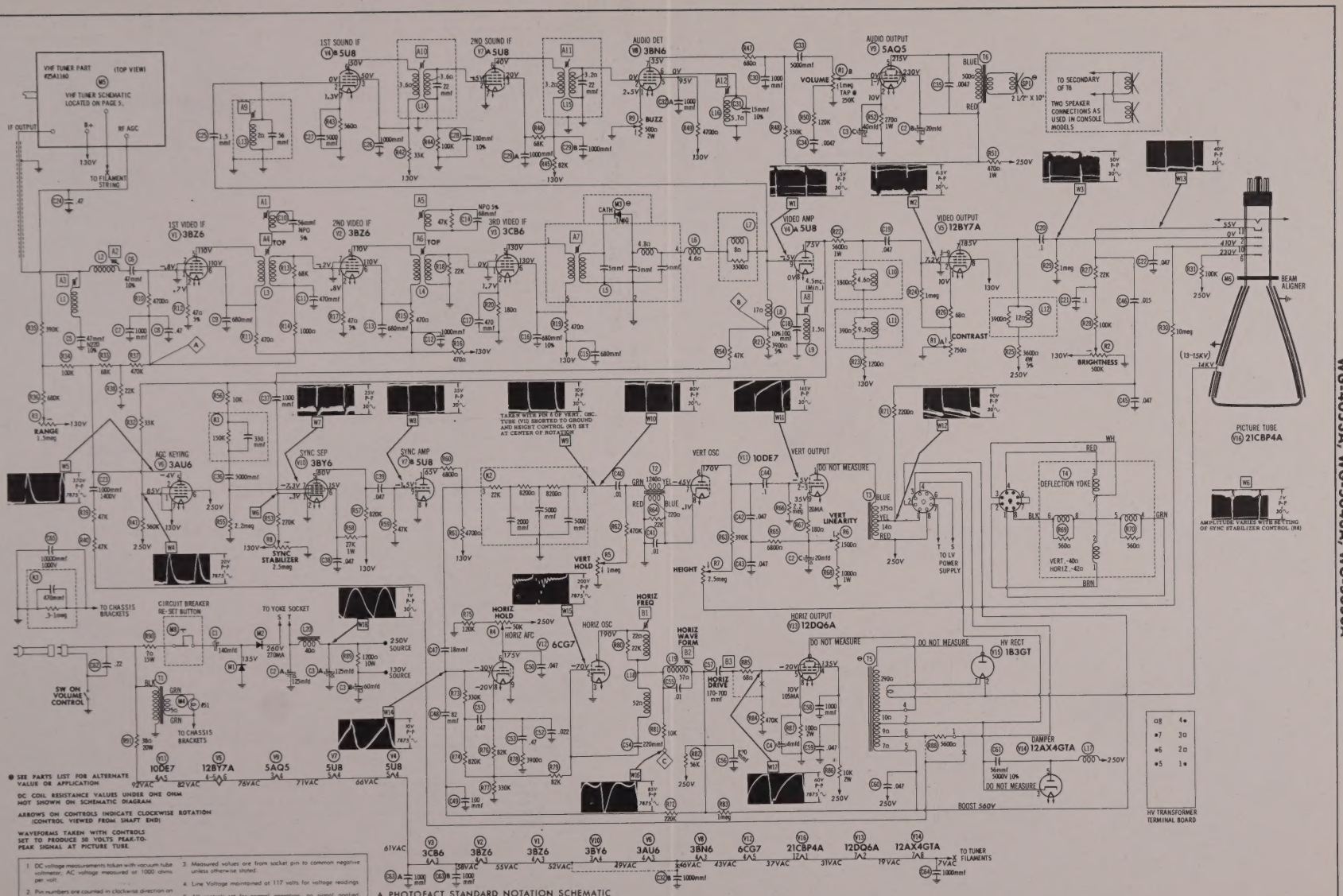
H427R

SET 422 FOLDER 1


VHF TUNER PART #25A1160 (TOP VIEW)
VHF TUNER SCHEMATIC LOCATED ON PAGE 3.
IF OUTPUT
B+
RF AGC
130V
TO FILAMENT STRING
1ST SOUND IF V4 5U8
2ND SOUND IF V7 5U8
AUDIO DET V8 3BN6
AUDIO OUTPUT V9 5AQ5
VOLUME
TO SECONDARY OF T6
TWO SPEAKER CONNECTIONS AS USED IN CONSOLE MODELS
1ST VIDEO IF V1 3BZ6
2ND VIDEO IF V2 3BZ6
3RD VIDEO IF V3 3CB6
VIDEO AMP V4 A 5U8
VIDEO OUTPUT V5 12BY7A
CONTRAST
BRIGHTNESS
BEAM ALIGNER
PICTURE TUBE V16 21CBP4A
RANGE
AGC KEYING V5 3AU6
SYNC SEP V10 3BY6
SYNC AMP V7 B 5U8
SYNC STABILIZER
TAKEN WITH PIN 6 OF VERT. OSC. TUBE (V11) SHORTED TO GROUND AND HEIGHT CONTROL (R7) SET AT CENTER OF ROTATION
VERT OSC V11 10DE7
VERT OUTPUT
DO NOT MEASURE
VERT LINEARITY
HEIGHT
VERT HOLD
TO LV POWER SUPPLY
DEFLECTION YOKE
VERT. -40o
HORIZ. -42o
AMPLITUDE VARIES WITH SETTING OF SYNC STABILIZER CONTROL (R4)
CIRCUIT BREAKER RE-SET BUTTON
TO CHASSIS BRACKETS
TO YOKE SOCKET
SW ON VOLUME CONTROL
250V SOURCE
130V SOURCE
HORIZ HOLD
HORIZ AFC
HORIZ OSC V12 6CG7
HORIZ FREQ
HORIZ WAVE FORM
HORIZ DRIVE
HORIZ OUTPUT V13 12DQ6A
HV RECT V15 1B3GT
DAMPER V14 12AX4GTA
BOOST 560V
HV TRANSFORMER TERMINAL BOARD
TO TUNER FILAMENTS
V11 10DE7 92VAC
V5 12BY7A 82VAC
V9 5AQ5 76VAC
V7 5U8 71VAC
V4 5U8 66VAC
V3 3CB6 61VAC
V2 3BZ6 55VAC
V1 3BZ6 52VAC
V10 3BY6 49VAC
V6 3AU6 46VAC
V8 3BN6 43VAC
V13 6CG7 37VAC
V16 21CBP4A 31VAC
V13 12DQ6A 19VAC
V14 12AX4GTA 7VAC
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings
5. All controls set for normal operation, no signal applied

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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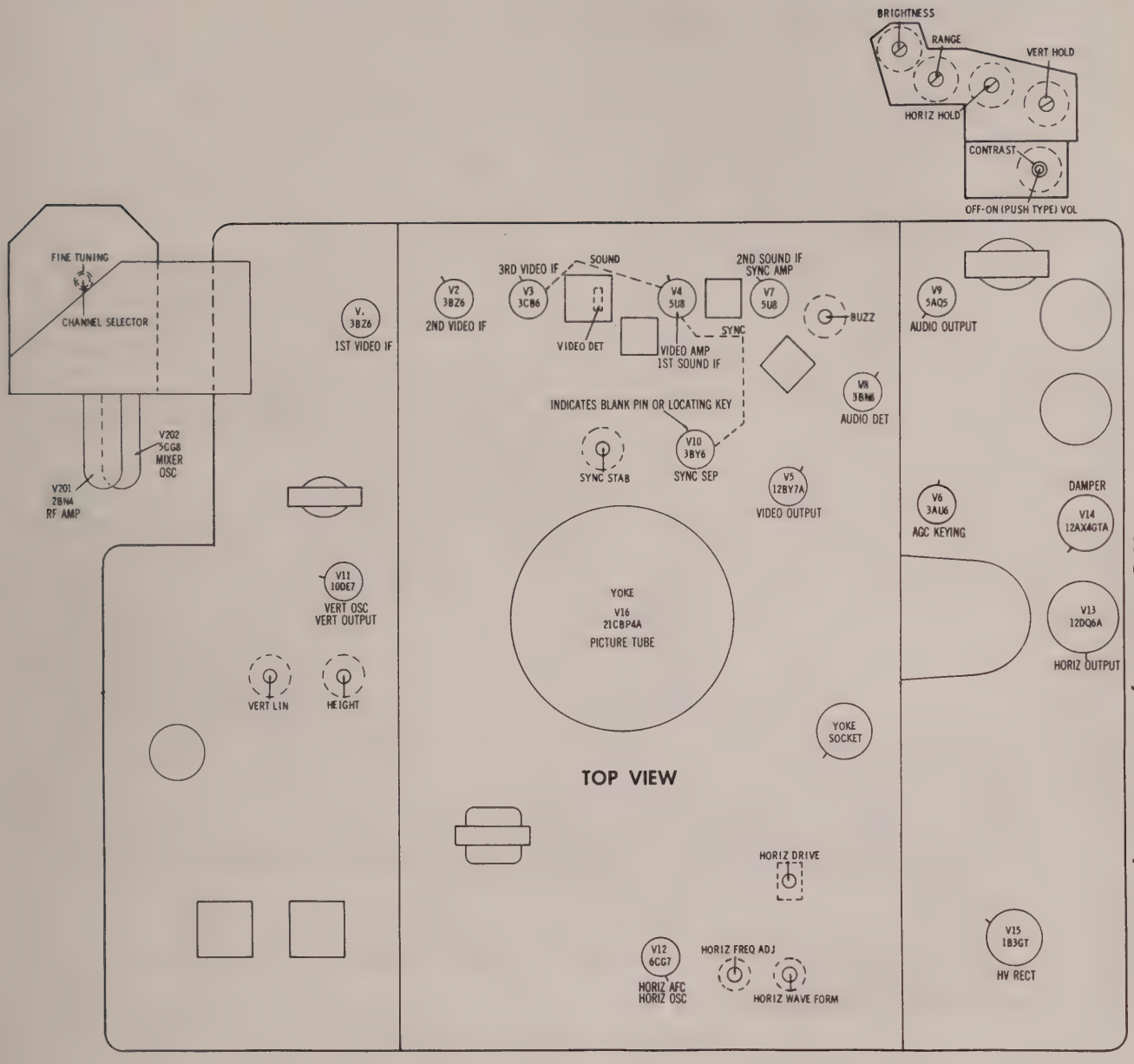
TUBE PLACEMENT CHART



AIRLINE MODELS WG-4043A, WG-4053A, WG-5043A, WG-5053A

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

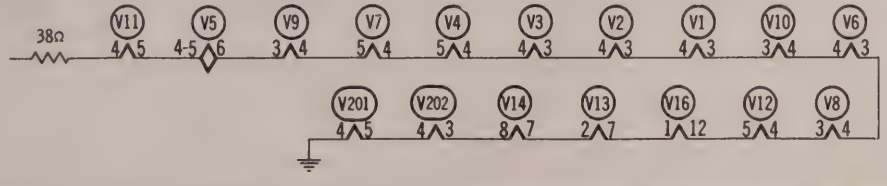
POWER SUPPLY FAILURE
No raster, no sound Circuit Breaker (M8), Rectifier (M1, M2)

SWEEP FAILURE
No raster, has sound V12, V13, V14, V15, V16
No vertical deflection V11
Poor vert. linearity or foldover V11
Poor horiz. linearity or foldover V12, V13, V14
Narrow picture V12, V13, V14, M1, M2
Vert. off freq. V11
Horiz. off freq. V12

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (M3)
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V5, V16
Has pic, no sound V4, V7, V8, V9
Overloaded picture V6

SYNC FAILURE
No vert. sync V10, V7
No horiz. sync V10, V7, V12
No vert. or horiz. sync V10, V7

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



FOLDER 1

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 1.5 volt bias supply to point Ⓐ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V202). Low side to chassis.	44.0MC (10MC Swp)	47.25MC	Any non-interfering channel	Vert. Amp. thru det. probe (Fig. 1) to pin 5 (plate) of 3BZ6 (V1). Low side to chassis.	A1	Adjust to place marker in trap notch as in Fig. 2.
2.	"	"	"	41.25MC 45.75MC 47.25MC	"	"	A2, A3, & Mixer Plate Coil	Adjust for response similar to Fig. 2. Mixer plate coil and A2 affects the shape of the top. A3 is adjusted to position the 41.25MC marker. This adjustment must be made correctly or the sound rejection will not be correct. The 45.75MC marker must be exactly on peak.
3.	"	"	"	42.8MC	"	Vert. Amp. thru 10K to point Ⓑ. Low side to chassis. DC probe of VTVM thru 10K to same point. Common to chassis. (Across video det. load).	A4	Increase bias at point A to 4.5 volts. Adjust sweep output for -2 volts DC at point Ⓑ. Adjust A4 for maximum amplitude at marker.
4.	"	"	"	41.25MC	"	"	A5	Adjust for MINIMUM amplitude at marker.
5.	"	"	"	45.3MC	"	"	A6	Adjust for maximum gain at marker.
6.	"	"	"	44.0MC	"	"	A7	"
7.	"	"	"	41.25MC 42.4MC 42.8MC 44.0MC 44.5MC 45.3MC 45.75MC 47.25MC	"	"		Check for response similar to Fig. 3 with markers as shown. If necessary, retouch A2 thru A7 for desired response. A7 controls the symmetry of the top, A6 controls position of the 45.75MC marker. A4 controls position of the 42.4MC marker (this slug will seldom need retouching. CAUTION: The position of 44.5MC marker is very critical (98%).

4.5MC TRAP ALIGNMENT

Use 0-10 volts AC scale on VTVM.
Set contrast control fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.005mfd	High side to pin 9 (grid) of 5U8 (V4). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	RF probe to pin 11 (cathode) of picture tube. Common to chassis.	A8	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT

Tune in a TV signal and reduce signal level at the antenna terminals by use of an attenuator or similar device until a hiss similar to super regeneration is heard in the sound.
Adjust A9, A10, A11 and A12 for maximum undistorted sound.
Adjust the buzz control (R9) for MINIMUM buzz.

TUNER ALINGMENT INSTRUCTIONS LOCATED ON PAGE 6.

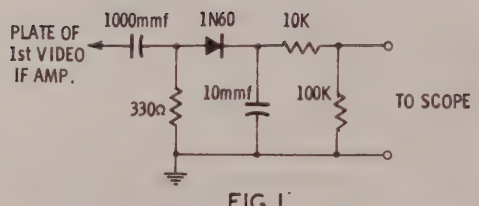


FIG.1

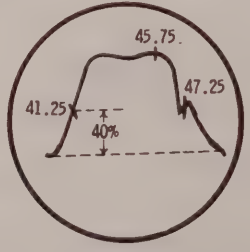


FIG.2

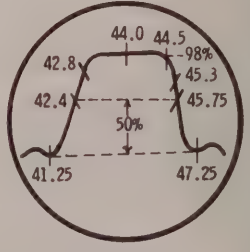
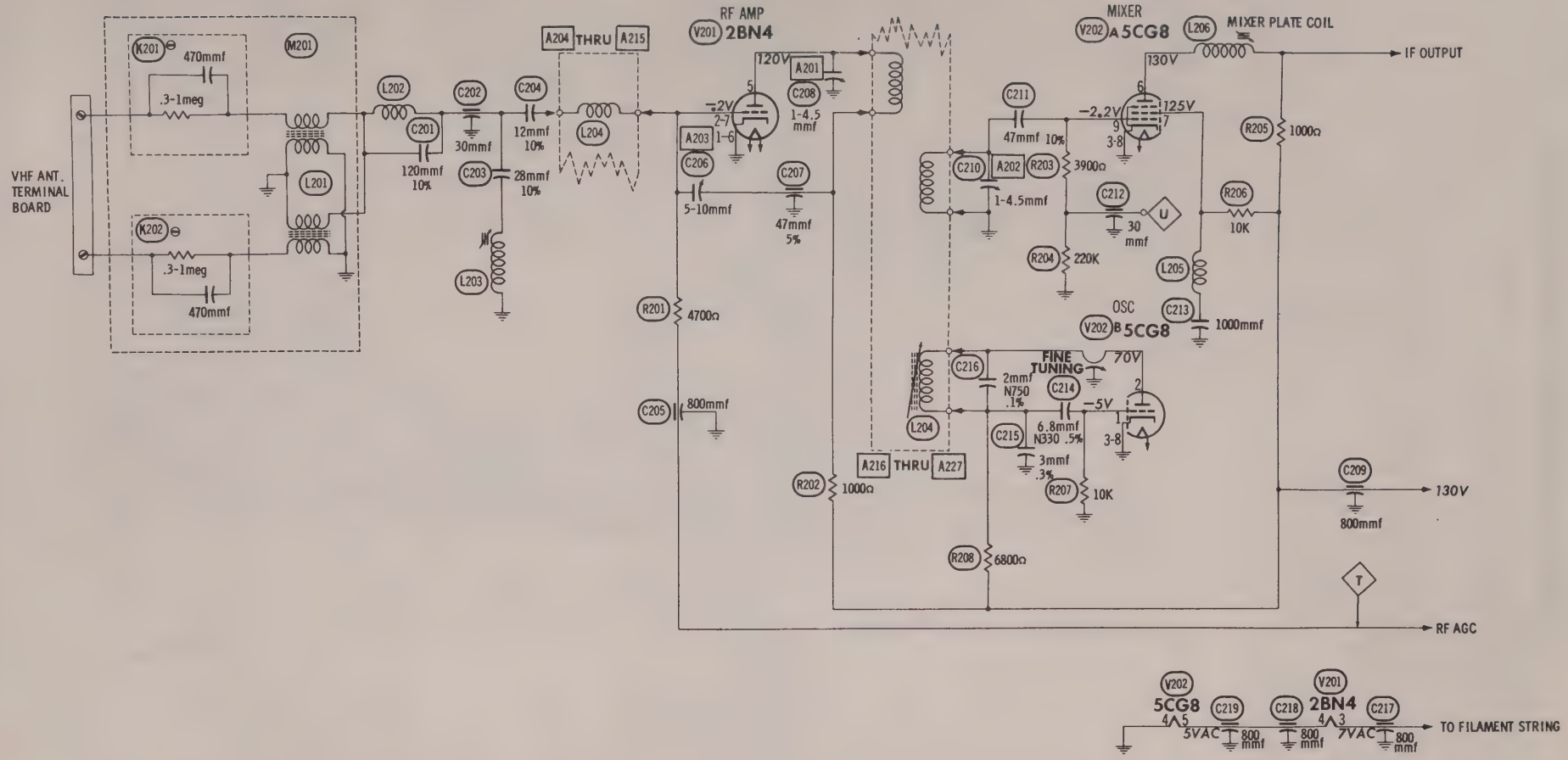


FIG.3



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER #25A1160

AIRLINE MODELS WG-4043A, WG-4053A, WG-5043A, WG-5053A

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
Allow a 20 minute warm-up period for the receiver and test equipment.

RF AND MIXER ALIGNMENT

Connect the negative lead of a 2.5 volt bias supply to point ⓣ. Positive to chassis.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading. (Approximately 1.5 volts).
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point ⓓ. Low side to chassis.	A201, A202	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201.
2.	"	"	"	"	"	Vert. Amp. thru detector (Fig. 202) to plate of 1st. IF tube. Low side to chassis.	A203	Adjust A203 to obtain MINIMUM response on the scope.
3.	"	"	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K to point ⓓ. Low side to chassis.	A204	Adjust for maximum amplitude of response similar to Fig. 201. Adjust by expanding or compressing coil turns.
			207MC	205.25MC 209.75MC	12		A205	
			201MC	199.25MC 203.75MC	11		A206	
			195MC	193.25MC 197.75MC	10		A207	
			189MC	187.25MC 191.75MC	9		A208	
			183MC	181.25MC 185.75MC	8		A209	
			177MC	175.25MC 179.75MC	7		A210	
			85MC	83.25MC 87.75MC	6		A211	
			79MC	77.25MC 81.75MC	5		A212	
			69MC	67.25MC 71.75MC	4		A213	
			63MC	61.25MC 65.75MC	3		A214	
			57MC	55.25MC 59.75MC	2		A215	

OSCILLATOR ALIGNMENT

Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading. (Approximately 4.5 volts).
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across video detector load.	A216	Adjust to place sound marker in trap notch as in Fig. 203. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

FIG.201

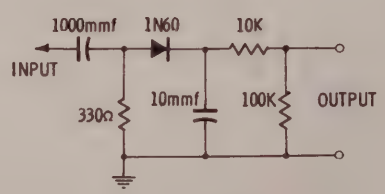


FIG.202

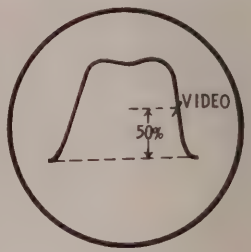
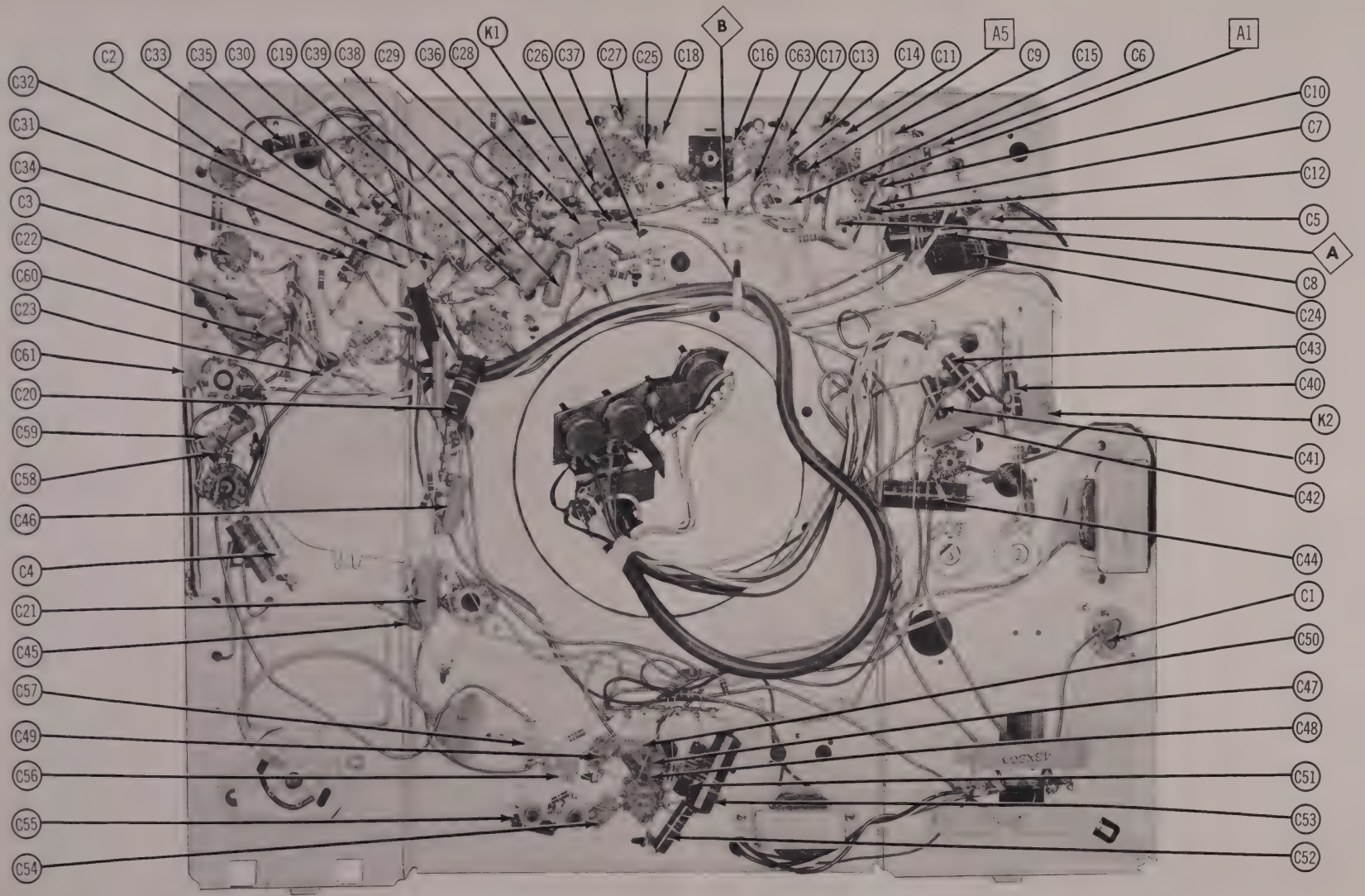
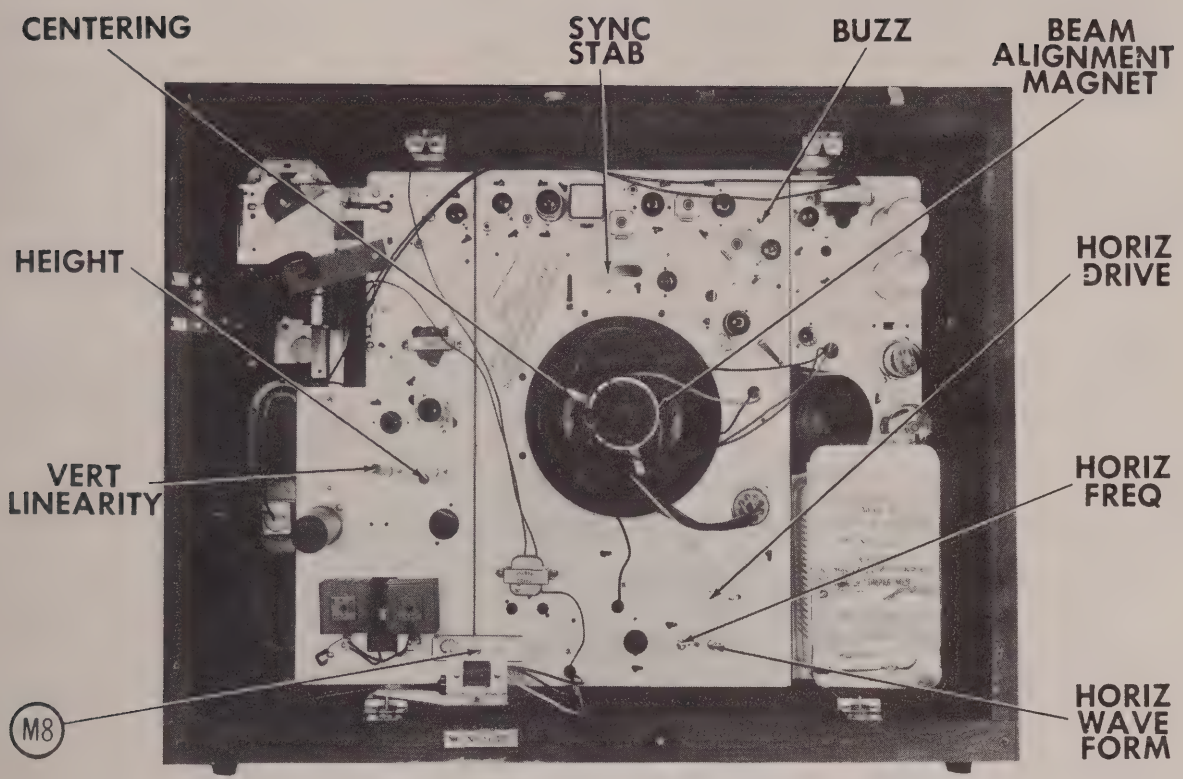


FIG.203



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Turn the horizontal hold control to the center of its range.

Connect a clip lead across the horizontal waveform coil (L19). Adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Remove the clip lead from L19. Connect the vertical amplifier of the scope thru a low capacity probe to point C. Low side to chassis.

Adjust the horizontal waveform slug (B2) for equal amplitudes of the round and sharp peaks of the waveform as shown in Fig. 4. While making this adjustment, keep the picture in sync with the horizontal hold control and B1.

Turn the horizontal drive trimmer (B3) clockwise as far as possible without the presence of vertical white lines or compression near the center of the raster.

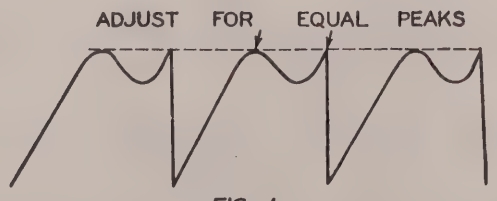


FIG. 4

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st Video IF Amp.	3BZ6	
V2	2nd Video IF Amp	3BZ6	
V3	3rd Video IF Amp	3CB6	
V4	Video Amp. - 1st Sound IF Amp	5U8	
V5	Video Output	12BY7A	
V6	AGC Keying	3AU6	
V7	2nd Sound IF Amp. - Sync Amp	5U8	

ITEM No.	USE	TYPE	NOTES
V8	Audio Det.	3BN6	
V9	Audio Output	5AQ8	
V10	Sync Sep.	3BY6	
V11	Vert Osc - Vert. Output	10DE7	
V12	Horiz AFC-Horiz. Osc.	6CG7	
V13	Horiz. Output	12GQ6A	
V14	Damper	12AX4GTA	
V15	HV Rectifier	1B3GT	

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: AIRLINE PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	NOTES
V16	21CBP4A		21CBP4-A ①	21CBP4A ①	① "Silverama" ② ② "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT	AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	140	150	45X421	AFH3J-23	XA2G51	FP117	TMS-24	T-055	TVL-1428
C2A	125	300	45X431	AFH4-03-80	XC0733.2	FP218		Q-223.2	*R2376
B	20	300				TC38		MT-0520	
C	20	50							
C3A	125	300	45X420	AFH3-99-82	XC0733.4	FP430.75	TMT-26	T-115	TVL-3574.6
B	60	300				TC65		MT-0550	
C	40	50							
C4	4	30	45X418	PRS15OV4	BBR4-50	TC30	TD-4-50	MT-0504	TE-1302.1

* Non-catalog item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	47									
C6	47			NPO-S1 47	DTZ-47	CTA8Q47C	TCO-47		5GA-Q47	N220 10%
C7	1000			BPD-001	DD-102	BYA10D1M	ED-1000	DC521	5HK-DI	10%
C8	.47	200		P4S8N-47		CUB2P47	GEM-3047	3TM-P47		
C9	680			BPD-00068	DD-68	BYA10T68	ED-680	UC-5368	5GA-T68	
C10	68						TCO-68			NPO 5%
C11	470			BPD-0004T	DD-47	BYA10T47	ED-470	UC-5347	5GA-T47	
C12	1000			BPD-001	DD-102	BYA10D1M	ED-1000	DC521	5HK-DI	
C13	680			BPD-00068	DD-68	BYA10T68	ED-680	UC-5368	5GA-T68	
C14	68				DTZ-68		TCO-68			NPO 5%
C15	680			BPD-00068	DD-68	BYA10T68	ED-680	UC-5368	5GA-T68	
C16	680						ED-680			10%
C17	470			BPD-0004T	DD-47	BYA10T47	ED-470	UC-5347	5GA-T47	
C18	100			NPO-S1 100	D8-101	CTA8T1C	GP-100	ZT-S31	5TCC-T1	10%
C19	.047	400		P4S8N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C20	.1	400		P4S8N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C21	.1	200		P2S8N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C22	.047	400		P4S8N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C23	1000	1400		HVD-15-100	DD80-103	HVB16D1	HD15-1000	DC3021	20GA-DI	
C24	.47	200		P2S8N-47		CUB2P47		GEM-3047	2TM-P47	
C25	1.5			NPO-S1 1.5	TCZ-1R5	CTA8V15C	TCO-15	ZT-S315	5TCC-V15	
C26	1000			BPD-001	DD-102	BYA10D1M	ED-1000	DC521	5HK-DI	
C27	5000			BPD-005	DD-502	BYA10D5	GP-5000	DC525	5HK-D5	
C28	100			NPO-S1 100	D8-101	CTA8T1C	GP-100	ZT-S31	5TCC-T1	10%
C28A	1000		80X3	BPD-2X001	DD8-103	BYC8D1	ED2-001	DCD-521	5HK-2D1	
B	1000									
C30	1000			BPD-001	DD-102	BYA10D1M	ED-1000	DC521	5HK-DI	
C31	25			NPO-D1 15	D8-150	C10Q15C	ED-15		5TCC-Q15	10%
C31A	1000		80X3	BPD-2X001	DD8-103	BYC8D1	ED2-001	DCD-521	5HK-2D1	
B	1000									
C33	5000			BPD-005	DD-502	BYA10D5	GP-5000	DC525	5HK-D5	
C34	.0047	400		P4S8N-0047	DS-472	CUB4D47	GP-4700	GEM-6247	6TM-D47	
C35	.0047	600		P6S8N-0047	DS-472	CUB6D47	GP-4700	GEM-6247	6TM-D47	
C36	5000			BPD-005	DD-502	BYA10D5	GP-5000	DC525	5HK-D5	
C37	1000			BPD-001	DD-102	BYA10D1M	ED-1000	DC521	5HK-DI	
C38	.047	400		P4S8N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C39	.047	400		P4S8N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C40	.01	600		P6S8N-01	D8-103	CUB6S1	GP-10000	GEM-611	6TM-S1	
C41	.01	600		P6S8N-01	D8-103	CUB6S1	GP-10000	GEM-611	6TM-S1	
C42	.047	600		P6S8N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C43	.047	200		P2S8N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C44	.1	600		P6S8N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C45	.047	600		P6S8N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C46	.05	600	RCP5O6S53M	P6S8N-05		CUB6D53		GEM-6153	6TM-S15	
C47	18		RCM20B180K	1468-00018	DD-180	5WS-Q18	CY10C180J		MS-418	
C48	82			1468-00082	DD-820	5WS-Q82	CY10C820J		MS-482	
C49	100			1468-0003	DD-101	5WS71	CY10C101J	MC395	MS-31	
C50	.047	400		P4S8N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C51	.047	200		P2S8N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C52	.022	200		P2S8N-022		CUB2S22		GEM-4122	2TM-S22	
C53	.47	200		P2S8N-47		CUB2S47		GEM-3047	2TM-P47	
C54	220			1468-00022	DD-221	5WS-T22	CT10C221K		MS-322	
C55	.01	600		P6S8N-01	D8-103	CUB6S1	GP-10000	GEM-611	6TM-S1	
C56	820			1468-00082	DD-821	5WS-T82	CT15C821K		MS-382	
C57	170-700		81A37							
C58	1000			BPD-001	DD-102	BYA10D1M	ED-1000	DC521	5HK-DI	
C59	.047	400		P4S8N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C60	.047	400		P4S8N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C61	54	5000	4 1X785							10%
C62	.22	600		P6S8N-23		CUB4P22		GEM-4223	4TM-P23	
C62A	1000		80X3	BPD-2X001	DD8-103	BYC8D1	ED2-001	DCD521	5HK-2D1	
B	1000									
C64	1000			BPD-001	DD-102	BYA10D1M	ED-1000	DC521	5HK-DI	
C65	10000	1000			DD-103	BYA10S1M			10HKB-S1	

PARTS LIST AND DESCRIPTIONS

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	750Ω	½	76X32		RTV-649		UR175	Contrast
B	1meg	½			Not Req.			Volume-tap ② 250K
C	Switch				Not Req.			
R2A	500K	½	40X436	AB-59	A47-500K-S	QU-133	U50	Brightness
B	Shaft			AK-8 *	RS-3/8 *	NQ *	DS-37	
R3A	1.5meg	½	40X430	AB-742	A47-1.5meg-S	QU-136	U155	Range
B	Shaft			AK-8 *	RS-3/8 *	NQ *	DS-37	
R4A	50K	½	40X427	AB-31	A47-50K-S	QU-128	U35	Horiz. Hold
B	Shaft			AK-8 *	RS-3/8 *	NQ *	DS-37	
R5A	1meg	½	40X418	AB-59	A47-1meg-S	QU-137	U54	Vert. Hold
B	Shaft			AK-8 *	RS-3/8 *	NQ *	DS-37	
R6A	1500Ω	½	40X395	AB-6	A47-1500	QU-109	PTA152L	Vert. Lin.
B	Shaft			AK-19	RN-3	TQ	Not Req.	
R7A	2.5meg	½	40X398	AB-83	A47-2.5meg -S	QU-139	PTA30L	Height
B	Shaft			AK-19	RN-3	TQ	Not Req.	
R8A	2.5meg	½	40X398	AB-83	A47-2.5meg -S	QU-139	PTA30L	Sync Stabilizer
B	Shaft			AK-19	RN-3	TQ	Not Req.	
R9	500Ω	4(WW)	40X397		39-500	NQ *	FL-500	Buzz

* Flle shaft flat as required.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING: OHMS	RATING: WATT	AIRLINE PART No.	NOTES
R10	4700Ω			
R11	470Ω			
R12	47Ω 5%			
R13	68K			
R14	1000Ω			
R15	470Ω			
R16	470Ω			
R17	47Ω 5%			
R18	22K			
R19	470Ω			
R20	180Ω			
R21	3900Ω 5%			
R22	56000Ω	1		
R23	12000			
R24	1meg			
R25	36000Ω 5%	4	43X331	
R26	68Ω			
R27	22K			
R28	100K			
R29	1meg			
R30	10meg			
R31	100K			
R32	33K			
R33	68K			
R34	100K			
R35	390K			
R36	680K			
R37	470K			
R38	22K			
R39	47K			
R40	47K			
R41	560K			
R42	33K			
R43	560Ω			
R44	100K			
R45	82K			
R46	68K			
R47	680Ω			
R48	330K			
R49	4700Ω			
R50	120K			

ITEM No.	RATING: OHMS	RATING: WATT	AIRLINE PART No.	NOTES
R51	470Ω	1		
R52	270Ω	1		
R53	370K			
R54	47K			
R55	2.2meg			
R56	10K			
R57	820K			
R58	27K	1		
R59	47K			
R60	6800Ω			
R61	4700Ω			
R62	470K			
R63	390K			
R64	22K			
R65	6800Ω			
R66	2.2meg			
R67	180Ω			
R68	1000Ω	1		
R69	560Ω			
R70	560Ω			
R71	2200Ω			
R72	220K			
R73	330K			
R74	820K			
R75	120K			
R76	82K			
R77	330K			
R78	3900Ω			
R79	82K			
R80	22K			
R81	10K			
R82	56K			
R83	1meg			
R84	470K			
R85	68Ω			
R86	10K	2		
R87	100Ω	2		
R88	5600Ω			
R89	1200Ω	10		
R90	7Ω	15	43X303	
R91	38Ω	20	43X304	

TRANSFORMER (FILAMENT)

ITEM No	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	REPLACEMENT DATA: AIRLINE PART No	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No
T1	117V	4.2V @ 1.5A		54X20		P-2964①		P-6467 ①	21F21 ①	F-13X①

① Drill new mounting hole.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	AIRLINE PART No.	Halldorson PART No.	Merit PART No	Ram PART No.	Rogers PART No.	Stancor PART No	Thordarson PART No	Triad PART No.
T2	Vert. Osc.	54X19 *	B8702	A-3003	V405		A-8125	26A03	A-97X
T3	Vert. Output	51X166A	Z1900①②	A-3038①③	V307①③		VO-100④	26S73 ③	A-118X ③
T4A	Yoke-Horiz. (24, 8Ms@	9A-2403	DF807	MDF-92	V90F19/43		DY-18A	Y-45	Y-45 ④
B	(90°)-Vert. (39MH)	①	③ ⑤	③ ⑤	③ ⑤		③ ⑤	③ ⑤	NW2 ④
M7	Rear Cover & Centering Device	2A435							YC-16 CL-1
	Yoke Clamp	30X611							MS-322
	Rubber Strip	6X247							
T5	Horiz. Output	53X362B	FB486 ③ *	HVO-157 ③ *	X174	EFR188	HO-263 *	FLY-143 ③ *	D-121 *
	Alt. Horiz. Output	53X363				④⑤*			

① Connect as autoformer.
② Use 9 : 1 turns ratio.
③ Drill new mounting hole(s).
④ Includes R59 and R70.
⑤ Use original rear cover, centering device and horizontal damping network.
⑥ Connect same as original.
⑦ Trim 1½" from top of terminal board.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

	ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
	4	5	5		5	8	5	P
	7	2	2		2	3	2	3
	8	6	6		6	2	6	2
	5	1	1		1	1	1	1
Special Notes →		③	③	①			③	

③ Remove one turn from filament winding.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: AIRLINE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T6	4700Ω	3-4Ω	51X176	22107	A-2930	AU-601	A-3877	24S51	S-3X	

SPEAKER

ITEM No.	TYPE: SIZE	TYPE: FIELD	TYPE: V. C. IMP.	REPLACEMENT DATA: AIRLINE PART No.	QUAM PART No.	NOTES
SP1	2½" x 10"	PM	3-4Ω	12A549 ①		① Used in table models
	4"	PM		12A547 ②		② Used in console models
	8"	PM		12A548 ②		

COILS (RF-IF)

ITEM No.	USE	AIRLINE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	39MC Trap Coil	9A2369			4302		
L2	1st. Video IF	9A2365		17-4534	TV-131	4302	VF-4
L3	2nd. Video IF	9A2363		17-4536		6232	Includes 47.25MC Trap
L4	3rd. Video IF	9A2414		17-4535		6421	Includes 41.25MC Trap
L5	4th. Video IF	9A2370		17-4514			Includes M3
L6	Resonant Choke	9A2375					30 Microhenries
L7	Series Peaking Coil	35A40		19-4073 *	TV-186 *	6172 *	VP-2 * 78 Microhenries, wound on 3300Ω resistor
L8	Shunt Peaking Coil	35A39		19-3250	TV-198	6130	VP-8 270 Microhenries
L9	4.5MC Trap	9A2413					
L10	Shunt Peaking Coil	35A42					30 Microhenries, wound on 1800Ω resistor
L11	Shunt Peaking Coil	35A41		19-3100 ♦	TV-194 ♦	6112 ♦	VP-3 ♦ 100 Microhenries, wound on 3900Ω resistor
L12	Shunt Peaking Coil	35A43		19-3160 ♦	TV-196 ♦	6120 ♦	150 Microhenries, wound on 3900Ω resistor
L13	1st. Sound IF	9A2367		17-1026	TV-154	1470-A	
L14	2nd. Sound IF	9A2368		17-3495	TV-113	6203	SF-2
L15	3rd. Sound IF	9A2366		17-3495	TV-113	6203	SF-2
L16	Quadrature Coil	9A2367		20-1005	TV-121	1480	
L17	RF Choke	9A2380		19-1001	BC-562	4604	1.5 Microhenries

* Parallel with 3300Ω resistor.
♦ Parallel with 3900 resistor.
♦ Parallel with 3900Ω resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: AIRLINE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L18	74Ω*		9A2371		TV-185	6211 ♦		HS-7	Horiz. Freq.
L19	57Ω		9A2372			6315		HS-5 ♦	Horiz. Waveform

* Tapped ② 52Ω.
♦ Enlarge mounting hole.

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	RATINGS: DC RES.	RATINGS: INDUCTANCE TO CURRENT 1000 (^)	REPLACEMENT DATA: AIRLINE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No
L20	.270A	40Ω	1 Hy.	52X95-5	C6037 ①	C-3998 ①		C-3326 ①	26C44 ①	C-34X

① Drill new mounting hole.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AIRLINE PART No.	REPLACEMENT DATA	
K1	Sync Sep. Coupling	330mmf, 150K	76X13	Sprague	PRC-5
K2	Vert. Integrator	2000mmf, 5000mmf, 6000mmf, 22K, 62000, 82000	76X7	Aerovox Centralab Erie Cornell-Dubilier Sprague	PA-110 PC-104 1405-01 115TM1 V-1
K3	Bracket Isolation	470mmf, .3-1meg	76X11	Centralab Sprague	RC-471 R-477

RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	AIRLINE PART No.	REPLACEMENT DATA: FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.270A	66X17 ①	1033A ①	1N1007 ②	RS350SL ①	350A ① M500 ③	① Selenium type. ② Germanium type.
M2	.270A	66X17 ①	1033A ①	1N1007 ②	RS350SL ①	350A ① M500 ③	③ Silicon type.

AIRLINE MODELS WG-4043A, WG-4053A, WG-5043A, WG-5053A

FOLDER 1

PARTS LIST & DESCRIPTION (continued)

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		AIRLINE PART No.	CBS PART No.	SYLVANIA PART No.	
M3	1N60 *		1N60	1N60	Video Detector (Pigtail)

* A CK706A may be used in some versions.

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M4	Pilot Light		#51
M5	Tuner	25A1160	VHF (Standard Coil #NAS-4145)
	Tuner	25A1159	UHF (Standard Coil #NEUFS-103)
M6	Magnet	2A476	Beam Alignment
M7	Centering Device	2A435	Includes yoke rear cover
M8	Circuit Breaker	2A475	

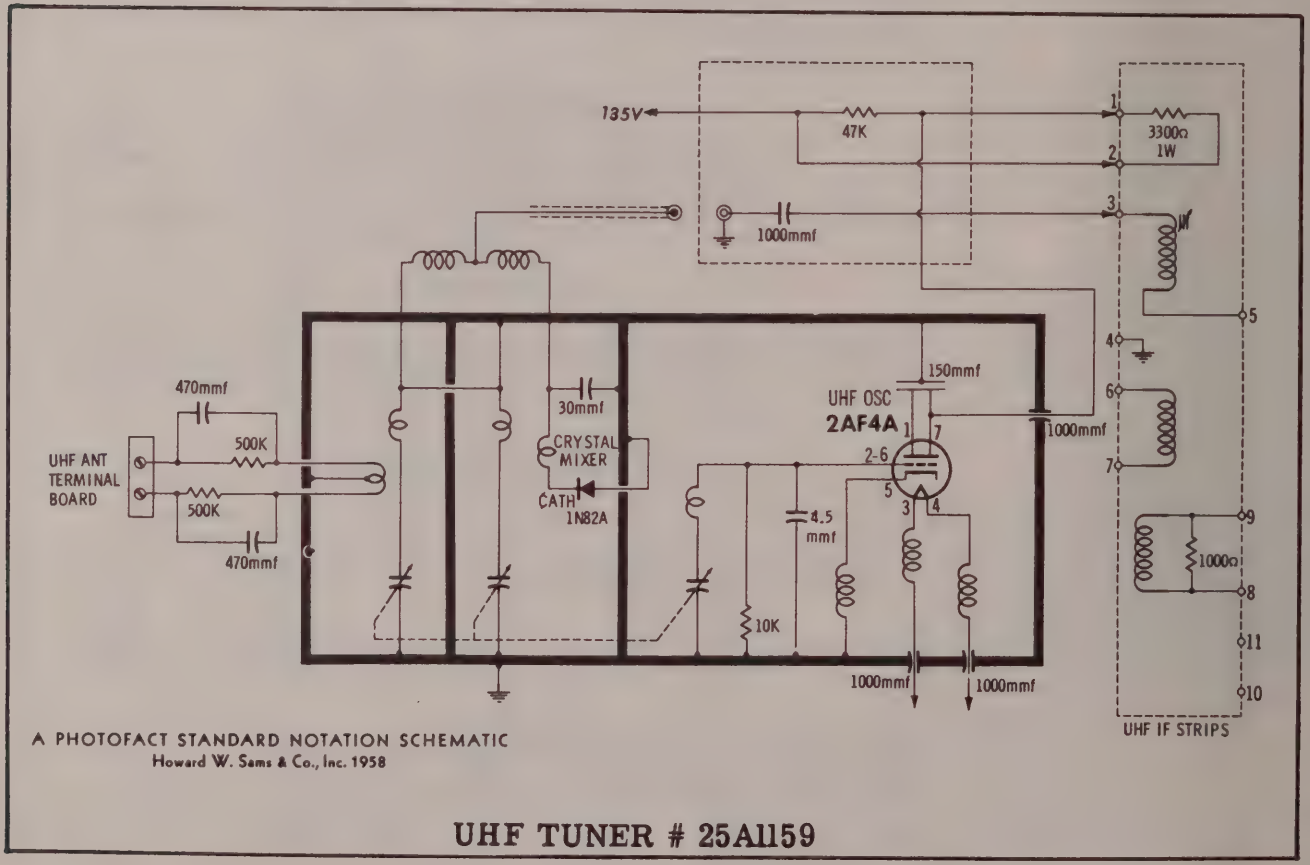
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	17X194-1	
Mask	S-38A395	VHF Models
Mask	S-38A391	UHF-VHF Models
Escutcheon	4X1315-2	
Drive Chain	34X602	
Knob	10A861-1	Secondary Controls
Knob	10A895-1	Fine Tuning
Knob	10A899-1	Channel Selector
Knob	10A896-1	Contrast
Knob	10A897-1	Volume

WIRING DATA

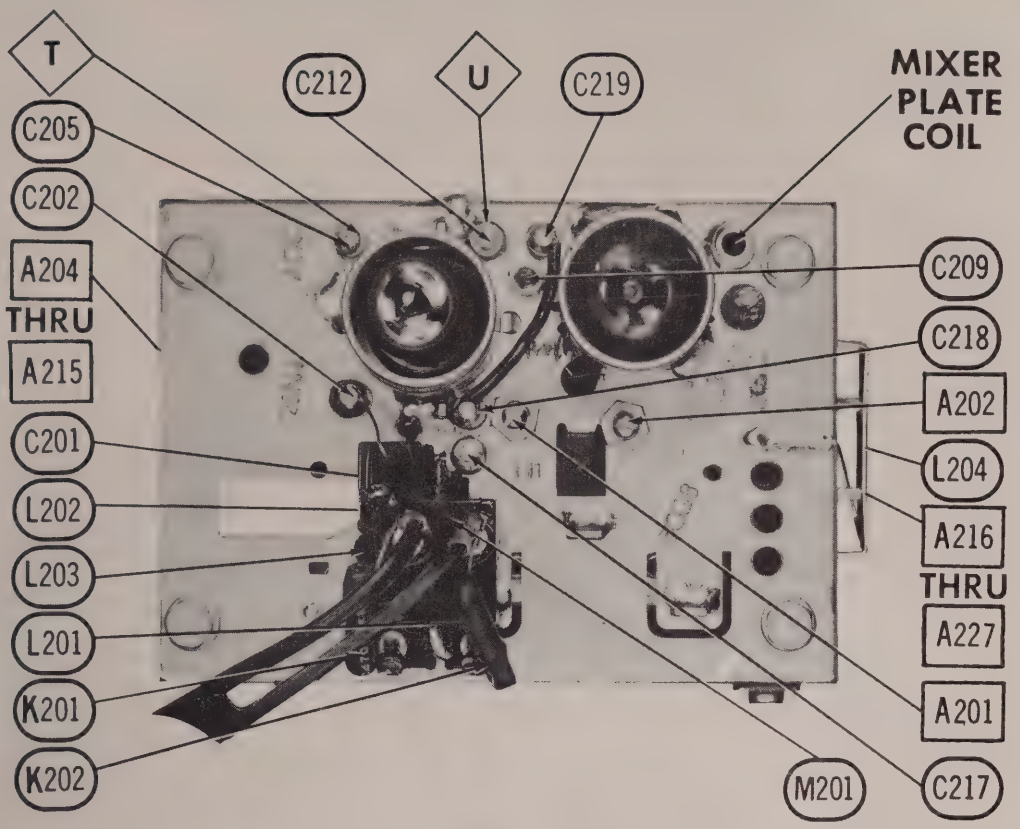
High Voltage Lead	Use BELDEN No.	8689
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



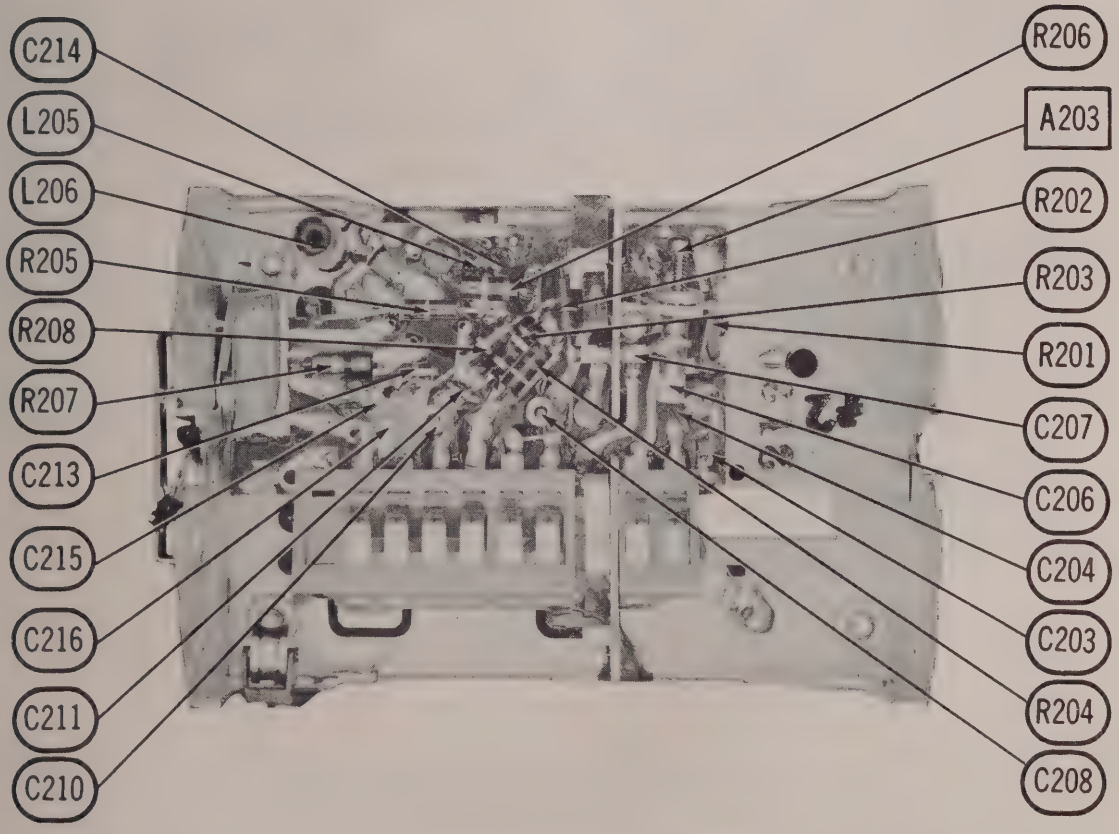
A PHOTOFACT STANDARD NOTATION SCHEMATIC

Howard W. Sams & Co., Inc. 1958

UHF TUNER # 25A1159



TUNER TOP VIEW



TUNER-BOTTOM VIEW

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	2BN4	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	5CG8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	120		13L8DB121K	NPO-SI 120	D6-121	L10T12	ED-120		5TCC-T12	10%
C202	30		13M320EA300J-05							
C203	28		13R-005							10%
C204	12		13R-003							10%
C205	800		13M320EA801Z-04							
C206	5-10		31T-3149-02							
C207	47		13M130U470J							5%
C208	1-4.5		31B-902-07		829-6		532-B			
C209	800		13M320EA801Z-04							
C210	1-4.5		31B-902-07		829-6		532-B			
C211	47		13R-008							10%
C212	30		13M320EA300M-06							
C213	1000		13R-024							
C214	6.8		13R-014							N330 .5%
C215	3		13R-011							.3%
C216	2		13R-009							N750 .1%
C217	800		13M320EA801Z-04							
C218	800		13M320EA801Z-04							
C219	800		13M320EA801Z-04							

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		PART No.	NOTES
	OHMS	WATT		
R201	4700Ω			
R202	1000Ω			
R203	3900Ω			
R204	220K			

ITEM No.	RATING		PART No.	NOTES
	OHMS	WATT		
R205	1000Ω			
R206	10K			
R207	10K			
R208	6800Ω			

COILS (RF-IF)

ITEM No.	USE	PART No.	NOTES
L201	Ant. Trans.	31T-210-01	Includes Assy.
L202	IF Trap Coil	34A-748	
L203	IF Trap	31TA-2109	
L204A	Ant., RF, Mixer		
	Grid, Osc. Coils	31M-300-2N4A	Channel 2
B	"	31M-300-3N4A	Channel 3
C	"	31M-300-4N4A	Channel 4
D	"	31M-300-5N4A	Channel 5
E	"	31M-300-6N4A	Channel 6
F	"	31M-300-7N4A	Channel 7

ITEM No.	USE	PART No.	NOTES
L204G	Ant. RF, Mixer		
	Grid, Osc. Coils	31M-300-8N4A	Channel 8
H	"	31M-300-9N4A	Channel 9
I	"	31M-300-10N4A	Channel 10
J	"	31M-300-11N4A	Channel 11
K	"	31M-300-12N4A	Channel 12
L	"	31M-300-13N4A	Channel 13
L205	RF Choke	25A-176-01	
L206	Mixer Plate Coil	31U-530-01	

COMPONENT COMBINATIONS

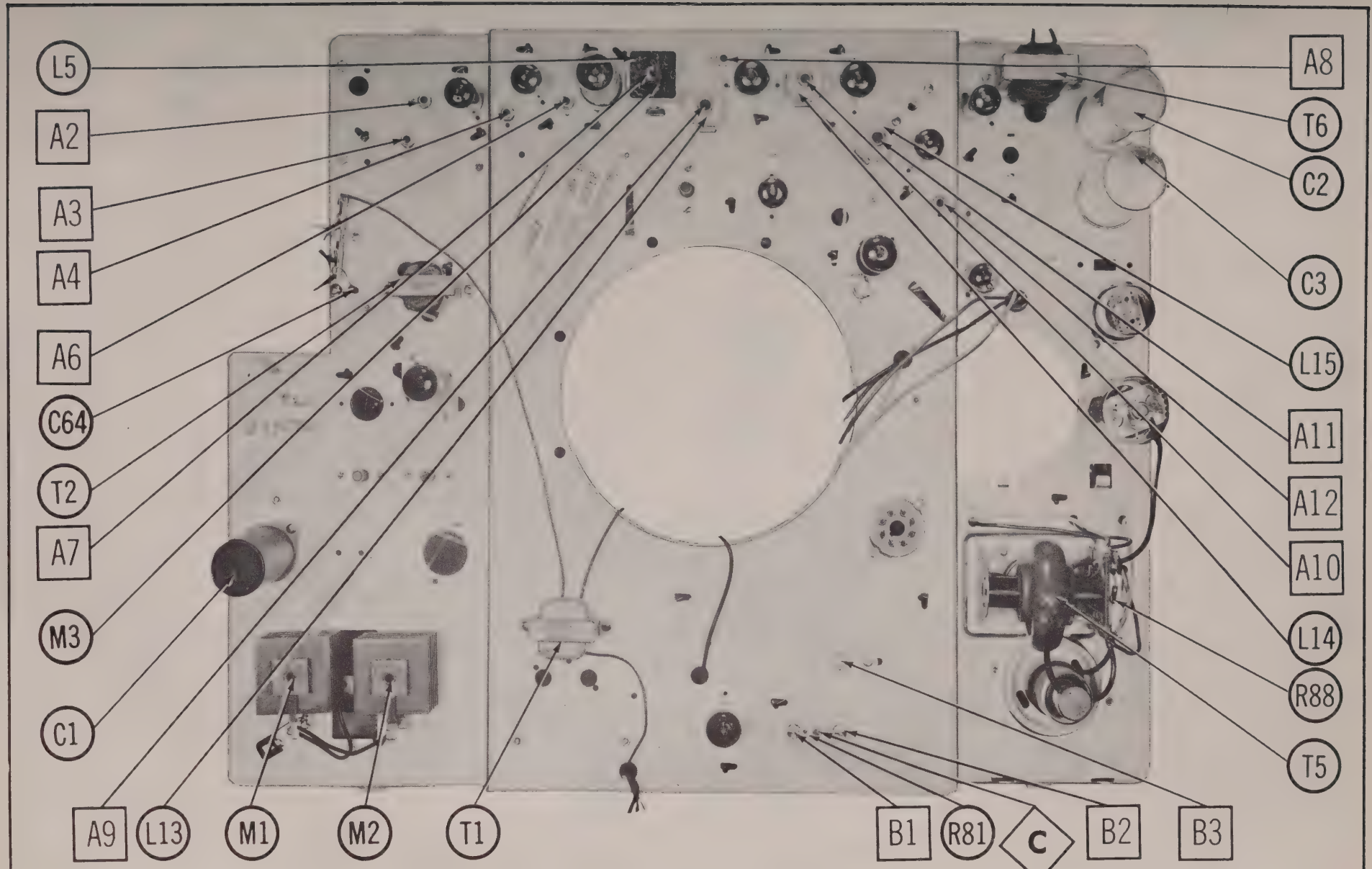
ITEM No.	USE	DESCRIPTION	PART No.	REPLACEMENT DATA	
K201	Antenna Isolation	470mmf, .3-1meg	13P-198 *	Centralab	RC-471
				Sprague	R-9177
K202	Antenna Isolation	470mmf, .3-1meg	13P-198 *	Centralab	RC-471
				Sprague	R-9177

* Alternate part #76X11.

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M201	Ant. Input Assy.	31T-2107-07	Includes K201, K202, L201
	Drum Assy.	31TA-2073-171-08	Less strips
	Osc. Slug	15A266	12 Required.

NOTE: Part numbers listed above are "Standard Coil" Part Numbers.



TP1 185V HORIZ WAVEFORM

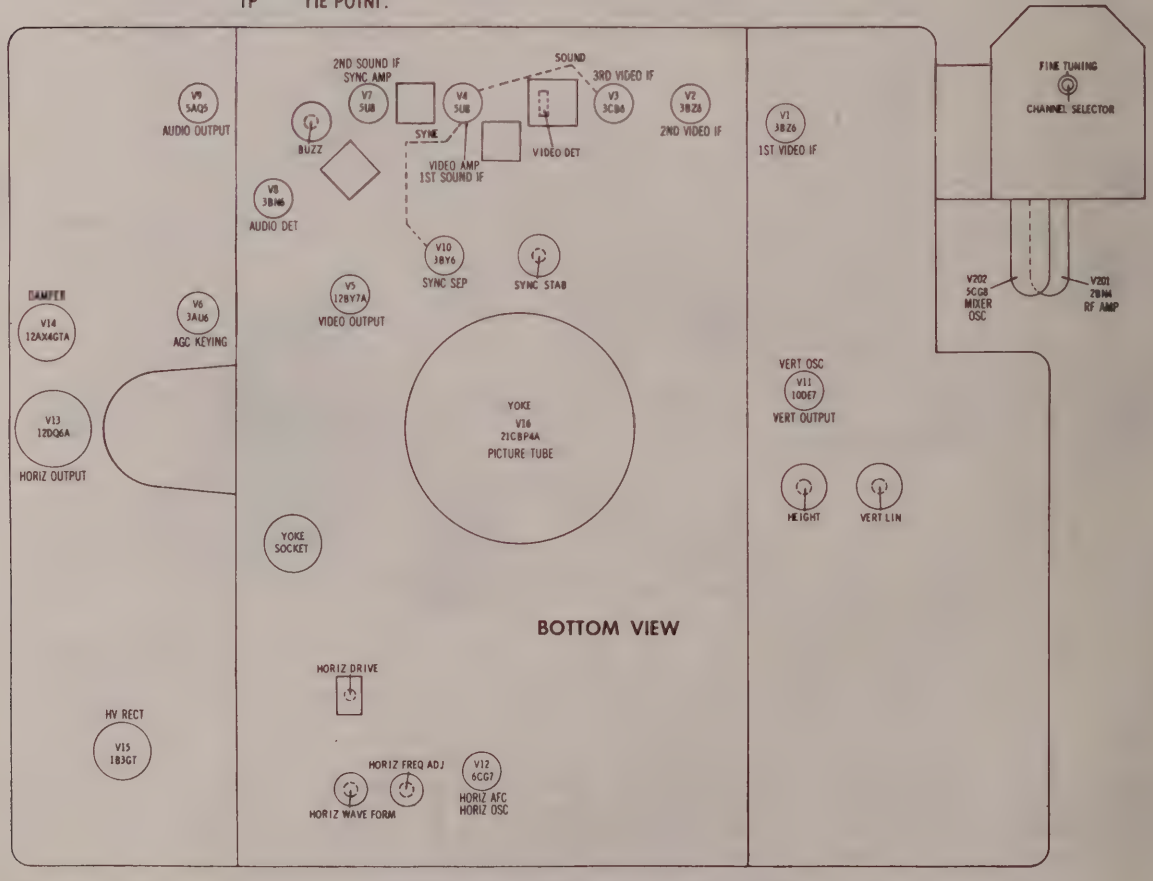
TP1

CHASSIS TOP VIEW

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BZ6	500K	47Ω	12Ω	13Ω	†2100Ω	†2100Ω	0Ω		
V2	3BZ6	490K	47Ω	13Ω	14Ω	†2100Ω	†2100Ω	0Ω		
V3	3CB6	.1Ω	180Ω	14Ω	15Ω	†1700Ω	†1700Ω	0Ω		
V4	5U8	†7300Ω	2Ω	†34K	15Ω	16Ω	†34K	560Ω	1.5Ω	3900Ω
V5	12BY7A	•380Ω	1meg	0Ω	19Ω	19Ω	18Ω	†3600Ω	†1200Ω	0Ω
V6	3AU6	†30K	†1200Ω	10.5Ω	11Ω	90K	†0Ω	†1200Ω		
V7	5U8	†12K	100K	†150K	16Ω	17Ω	†83K	0Ω	0Ω	47K
V8	3BN6	•220Ω	3.2Ω	9Ω	10.5Ω	†5900Ω	5.7Ω	†330K		
V9	5AQ5	0Ω	270Ω	18Ω	17Ω	†970Ω	†470Ω	0Ω		
V10	3BY6	•300K	0Ω	12Ω	11Ω	†820K	†28K	2.2meg		
V11	10DE7	†390Ω	2.2meg	2.2meg	20.5Ω	19Ω	•‡1.4meg	• 770K	220Ω	•1400Ω
V12	6CG7	†56K	410K	0Ω	9Ω	8Ω	•†27K	1.5meg	410K	0Ω
V13	12DQ6A	TP	4.5Ω	NC	†10K	470K	TP	7Ω	100Ω	TOP CAP ‡10Ω
V14	12AX4GTA	TP	NC	¶	NC	†.1Ω	TP	4.5Ω	2Ω	
V15	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡300Ω
V16	21CBP4A	7Ω	1meg	PIN 6 †100K	PIN 10 ‡10meg	PIN 11 •240K	PIN 12 8Ω			
V201	2BN4	0Ω	500K	2Ω	1.5Ω	†2200Ω	0Ω	500K		
V202	5CG8	10K	†8000Ω	0Ω	0Ω	1.5Ω	†2200Ω	†11K	0Ω	220K

¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 250V SOURCE.
‡ MEASURED FROM PIN 3 OF V14.
NC NO CONNECTION.
TP TIE POINT.



TUBE PLACEMENT CHART

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

CORONADO
MODEL TV2-9394B

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

CORONADO
MODEL TV2-9394B

CORONADO
MODEL TV2-9394B

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SET 422 FOLDER 2

PHOTOFACT* Folder

*TRADE MARK

ELECTRONIC INDUSTRIES ASSOCIATION EIA MEMBER

CORONADO
MODEL TV2-9394B

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 7 push-on type knobs from the top.
2. Remove 5 metal screws holding the rear cover. Remove the rear cover.
3. Remove 2 metal screws holding the front. Pull front out at bottom and lift up. Remove safety glass.
4. Remove 2 metal screws holding the antenna terminal board.
5. Remove the 2 trim strips from the sides.
6. Remove 8 metal screws holding the top of the cabinet. Remove the speaker leads and the top.
7. Remove 2 hex nuts and 1 bolt holding resistor terminal board.
8. Remove 2 metal screws holding the AC interlock.
9. Remove the picture tube socket, yoke plug and HV lead.
10. Remove 2 side chassis bolts and 2 bottom chassis bolts.
11. Remove the chassis.

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

TRADE NAME	Coronado MODEL TV2-9394B
SUPPLIER	Gamble-Skogmo, Inc., 15 North 8th. Street, Minneapolis, Minn.
TYPE SET	Television Receiver
TUBES	Seventeen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 170 Watts, 1.65 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF Oscillator is possible by removing the rear cover, and supply power to the receiver. Set the Fine Tuning at the center of its range. The adjustments are accessible, one at a time, thru a hole in the right side of the tuner rear cover as viewed from the rear. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 2 metal screws from the bottom edge of the front. Pull front out at the bottom and lift up to remove.

SPECIAL ADJUSTMENTS

A. Focus
No provision is made to vary the focus on this receiver.

B. Range
Observe the picture and advance the Range Control to a point where the picture distorts or a buzz is heard in the sound. Back off from this setting until the picture becomes stable with no noise in the sound.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

For adjustment of the Horizontal Oscillator, it is necessary to remove the rear cover and supply power to set. Set the Horizontal Hold at the center of its range and adjust the Horizontal Frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart.)

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the buzz control for MINIMUM buzz and maximum sound. (For location, see tube placement chart.)

FUSE DEVICE

A Circuit Breaker is used for LV power supply protection, and may be reset by depressing the reset button. (For location, see tube placement chart.)

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

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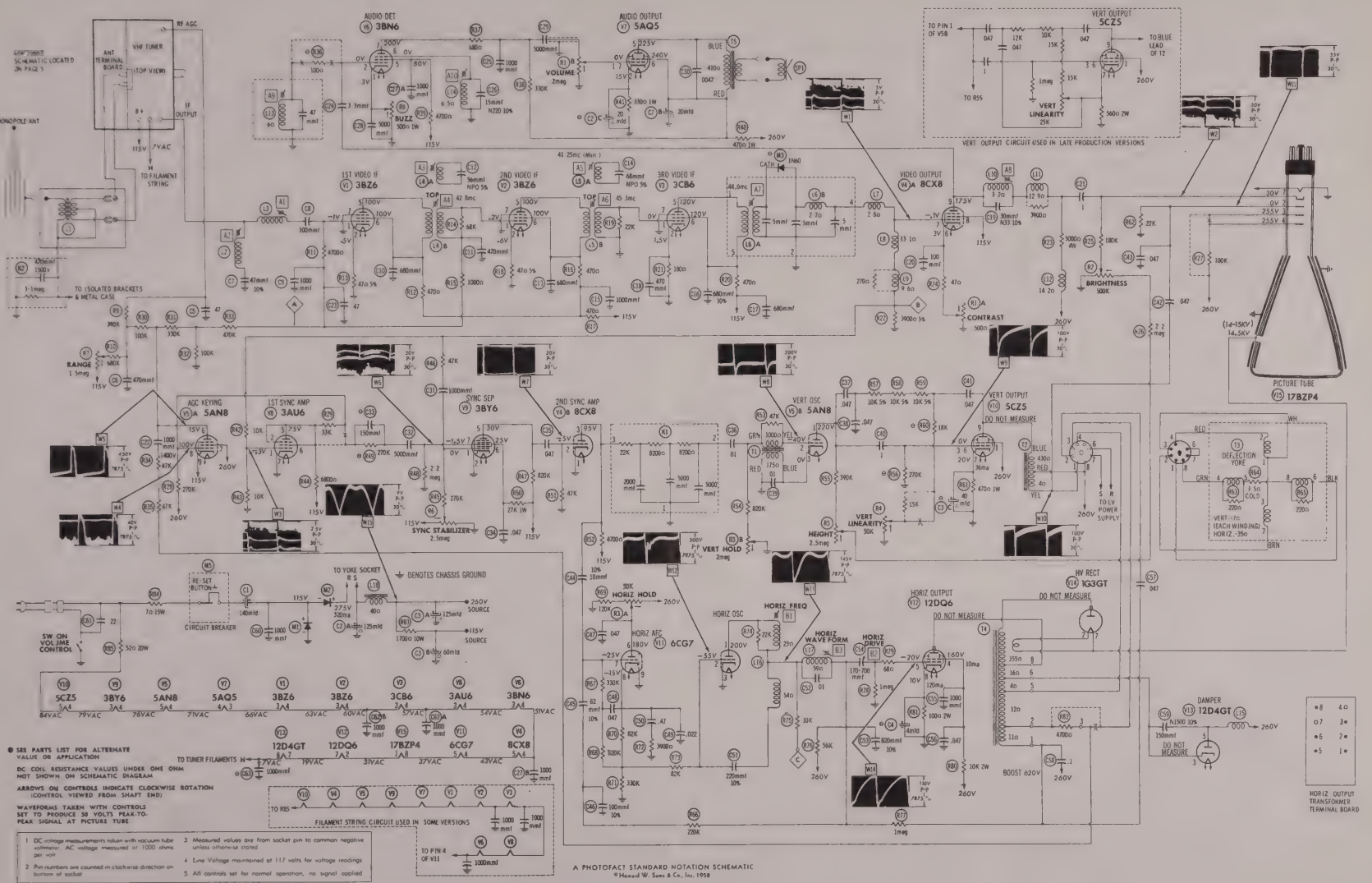
H715R

CORONADO
MODEL TV2-9394B

CORONADO
MODEL TV2-9394B

SET 422 FOLDER 2


AUDIO DET V6 3BN6
AUDIO OUTPUT V7 5AQ5
VOLUME 2meg
VERT OUTPUT 5CZ5
VERT OUTPUT CIRCUIT USED IN LATE PRODUCTION VERSIONS
VERT LINEARITY 25K
1ST VIDEO IF V1 3BZ6
2ND VIDEO IF V2 3BZ6
3RD VIDEO IF V3 3CB6
VIDEO OUTPUT V4 8CX8
BRIGHTNESS 500K
CONTRAST 500n
PICTURE TUBE V15 17BZP4
DEFLECTION YOKE
AGC KEYING V5A 5AN8
1ST SYNC AMP V5B 3AU6
SYNC SEP V3 3BY6
2ND SYNC AMP V4 8CX8
VERT OSC V5 5AN8
VERT OUTPUT V10 5CZ5
DO NOT MEASURE
RANGE 1.5meg
SYNC STABILIZER 2.5meg
VERT HOLD 2meg
HEIGHT 2.5meg
VERT LINEARITY 30K
TO LV POWER SUPPLY
HV RECT V14 1G3GT
HORIZ HOLD 50K
HORIZ AFC V11 6CG7
HORIZ OSC
HORIZ FREQ
HORIZ WAVE FORM
HORIZ DRIVE
HORIZ OUTPUT V12 12DQ6
DAMPER V13 12D4GT
BOOST 620V
HORIZ OUTPUT TRANSFORMER TERMINAL BOARD
RE-SET BUTTON
CIRCUIT BREAKER
SW ON VOLUME CONTROL
TO YOKE SOCKET
DENOTES CHASSIS GROUND
275V 320ma
260V SOURCE
115V SOURCE
TO TUNER FILAMENTS
FILAMENT STRING CIRCUIT USED IN SOME VERSIONS
TO PIN 4 OF V11
TO PIN 1 OF V5B
TO BLUE LEAD OF T2
TO R55
TO ISOLATED BRACKETS & METAL CASE
TO FILAMENT STRING
MONOPOLE ANT
RF AGC
IF OUTPUT
VHF TUNER
ANT TERMINAL BOARD
TOP VIEW
5CZ5 5AT4 84VAC
3BY6 5AT4 79VAC
5AN8 5AT4 76VAC
5AQ5 6AX3 71VAC
3BZ6 3AT4 66VAC
3BZ6 3AT4 63VAC
3CB6 3AT4 60VAC
3AU6 3AT4 57VAC
3BN6 3AT4 54VAC
31VAC
12D4GT 8A7 12VAC
12DQ6 7A2 19VAC
17BZP4 1A8 31VAC
6CG7 5A4 37VAC
8CX8 5A4 43VAC
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE
1 DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1000 ohms per volt
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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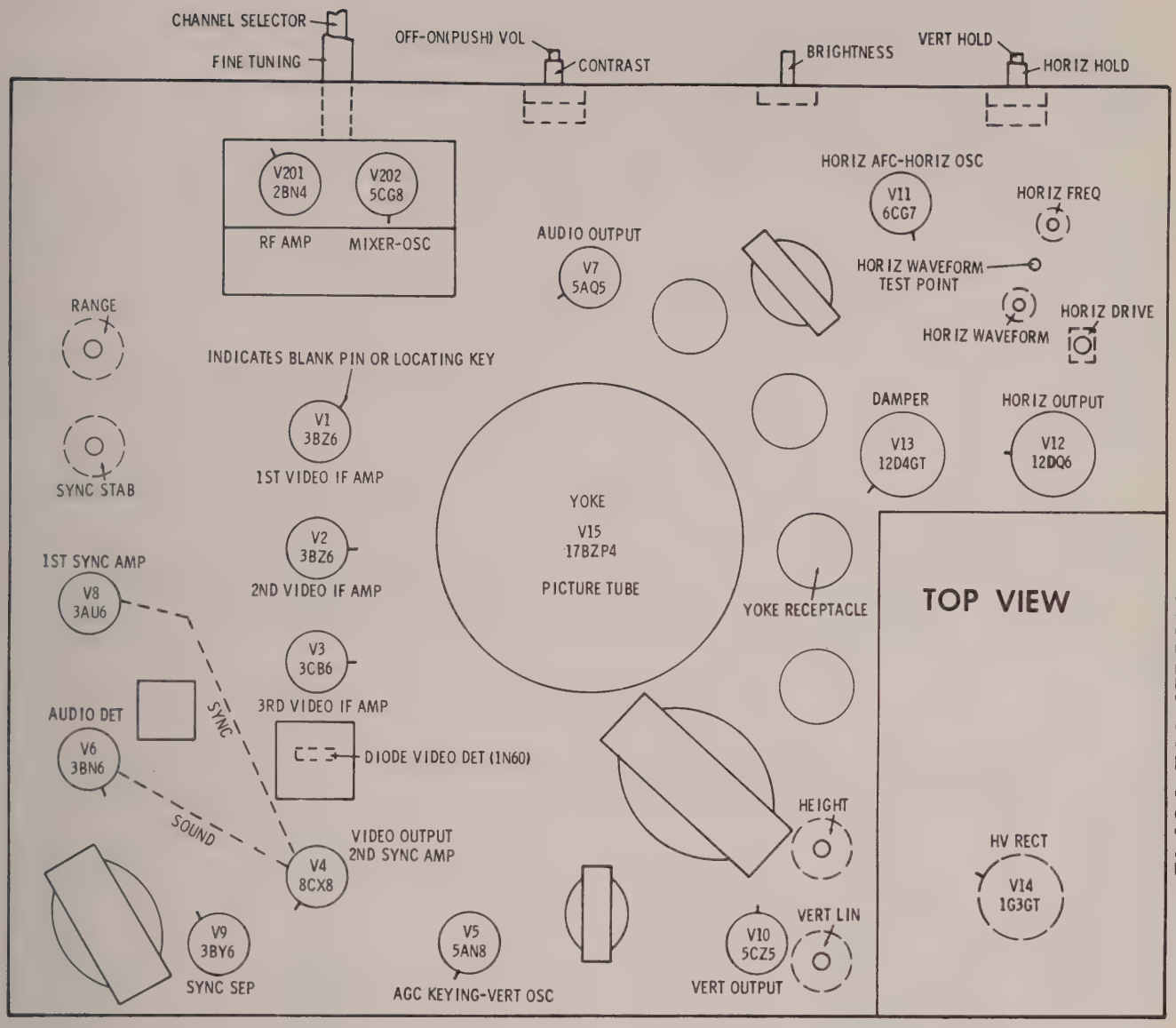
TUBE PLACEMENT CHART



CORONADO
MODELS TV2-9394B

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

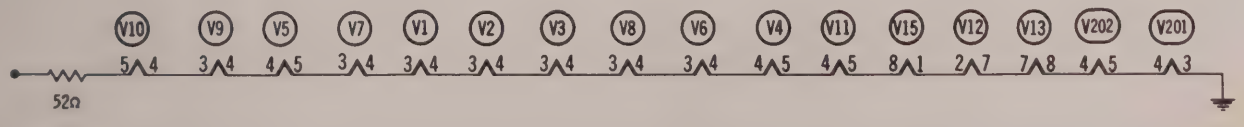
POWER SUPPLY FAILURE
No raster, no sound — Circuit Breaker (M5), Rectifiers (M1, M2)

SWEEP FAILURE
No raster, has sound — V11, V12, V13, V14, V15
No vertical deflection — V5, V10
Poor vert. linearity or foldover — V5, V10
Poor horiz. linearity or foldover — V11, V12, V13
Narrow picture — V11, V12, V13, M1, M2
Vert. off freq. — V5
Horiz. off freq. — V11

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster — V1, V2, V3, Diode (M3), V4
No pic, no sound, has snow — V201, V202, V1
No pic, has sound, has raster — V4, V15
Has pic, no sound — V6, V7
Overloaded picture — V5

SYNC FAILURE
No vert. sync — V8, V9, V4
No horiz. sync — V8, V9, V4, V11
No vert. or horiz. sync — V8, V9, V4

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



FOLDER 2

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 4.5 volt bias supply to point Ⓐ . Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202). Low side to chassis.	43.5MC (15MC Swp)	41.25MC 45.75MC 47.25MC	Any non-interfering channel	Vert. Amp. thru detector probe (Fig.1) to pin 5 (plate) of 1st. Video IF Amp. (V1). Low side to chassis.	A1, A2, A3, & Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown. A1 and Mixer Plate Coil control shape of curve top and position of 45.75MC marker. Adjust A2 to position 41.25MC marker and A3 to position 47.25MC marker.
2.	"	"	Not used	42.8MC (Unmod)	"	USE VTVM. DC probe to point Ⓑ. Common to chassis (Across Video Det. Load)	A4	Adjust for maximum gain.
3.	"	"	"	41.25MC	"	"	A5	Adjust for MINIMUM deflection.
4.	"	"	"	45.3MC	"	"	A6	Adjust for maximum deflection.
5.	"	"	"	44.0MC	"	"	A7	"

4.5MC TRAP ALIGNMENT

Restore receiver to normal operation and tune in a TV station. Adjust Fine Tuning until a beat pattern is noted in the picture. Adjust A8 until the horizontal scanning lines are smooth and continuous.

SOUND IF ALIGNMENT

Tune in a TV signal and adjust controls for normal operation. Reduce the signal strength by connecting an adjustable attenuator in series with the antenna lead. Attenuate signal until a hiss is heard in the sound similar to super-regeneration. Adjust A9, A10 and the Buzz Control (R8) for maximum undistorted sound with MINIMUM buzz.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 12.

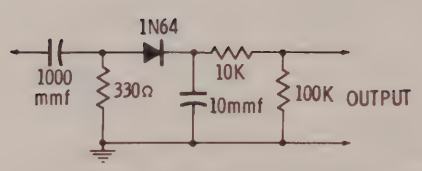


FIG.1

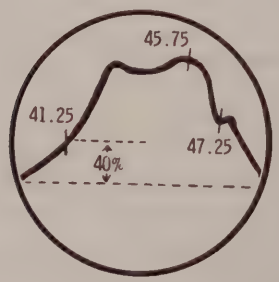
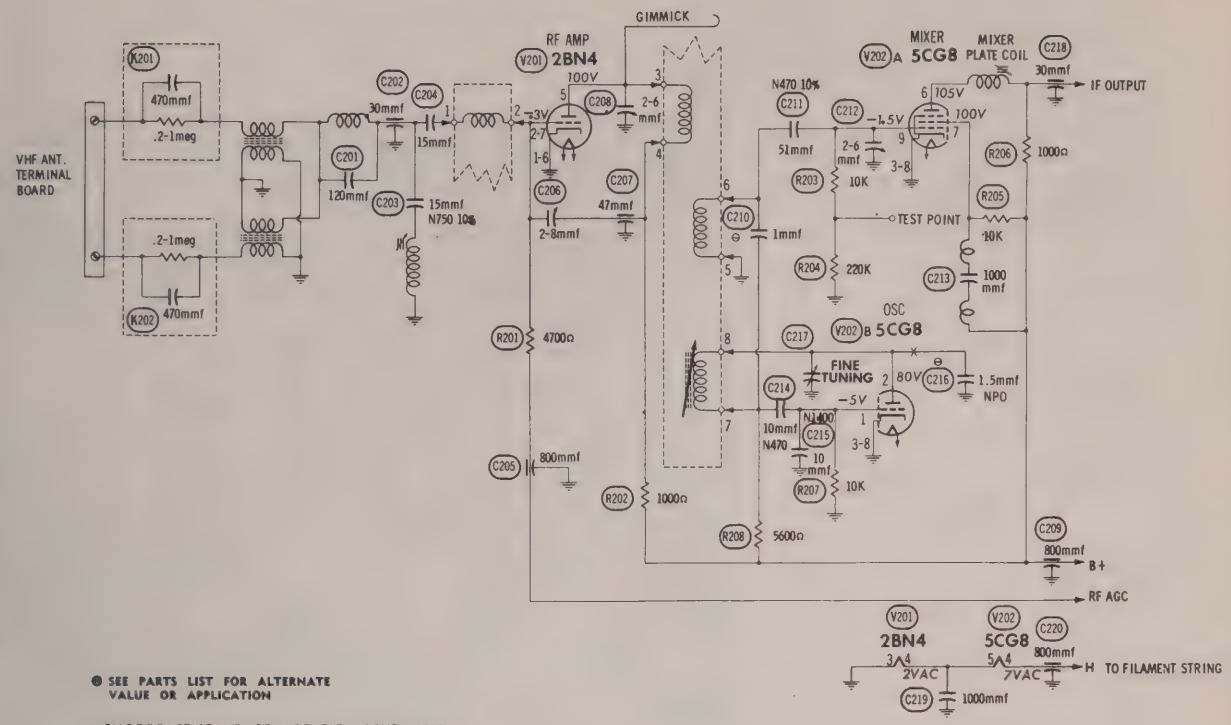


FIG. 2



● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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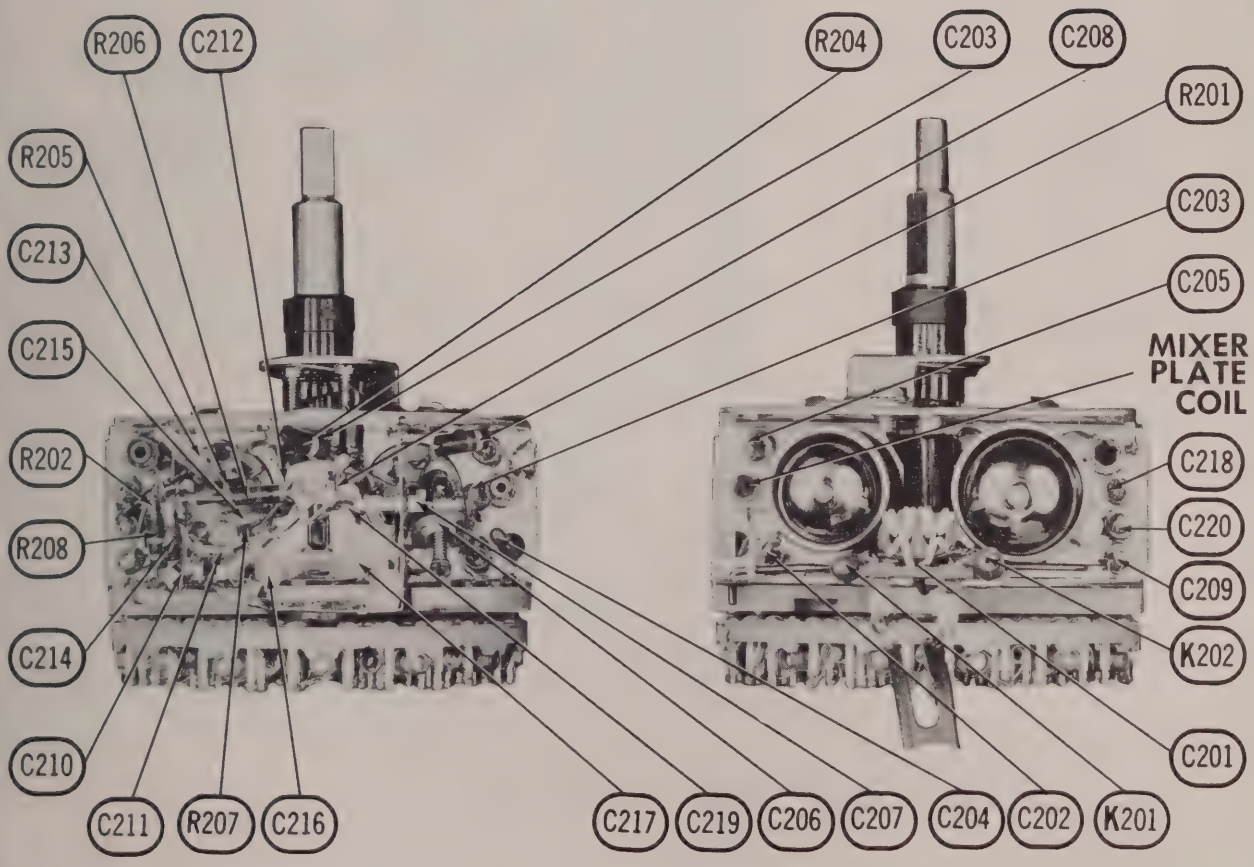
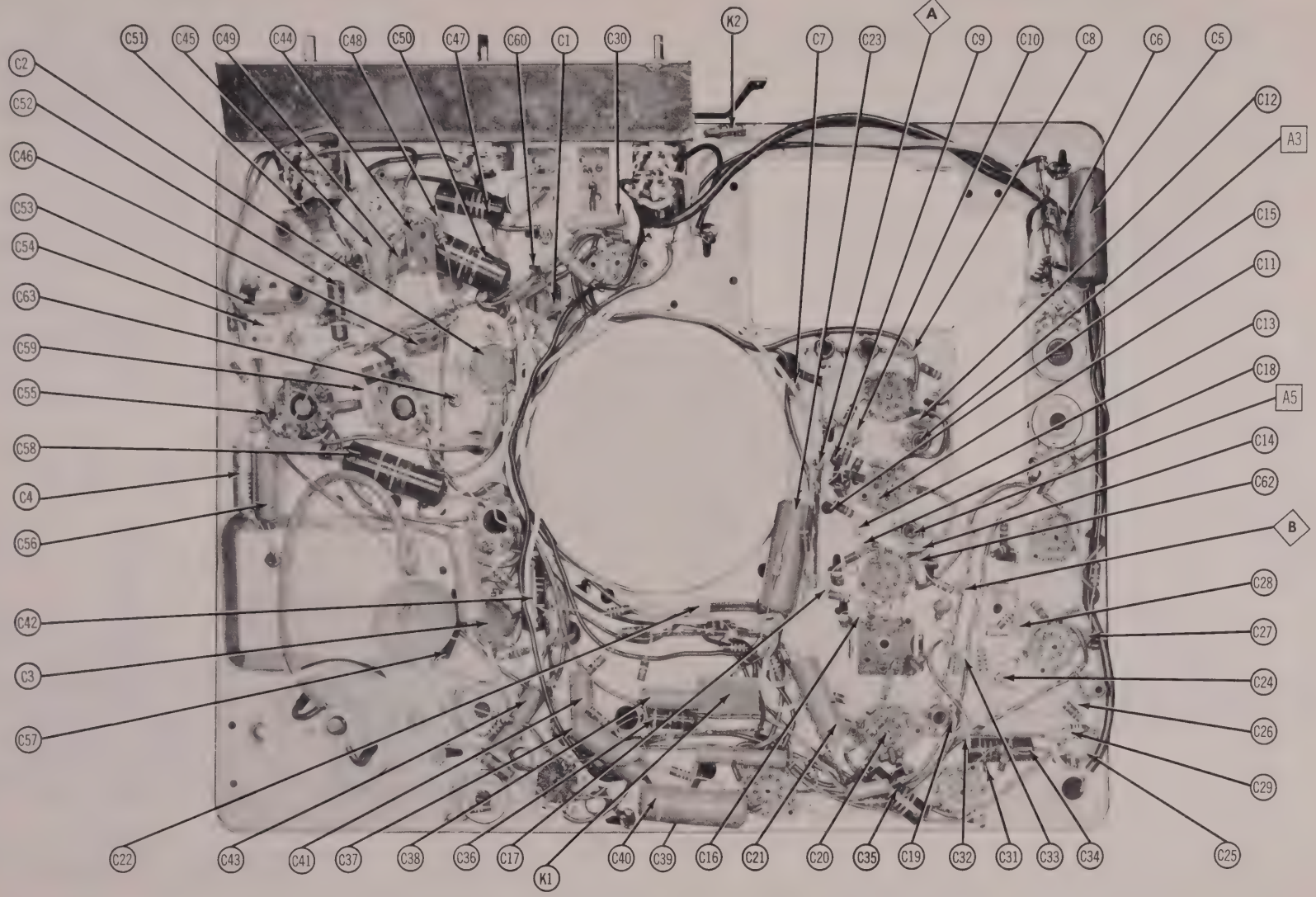
VHF TUNER #25A1169

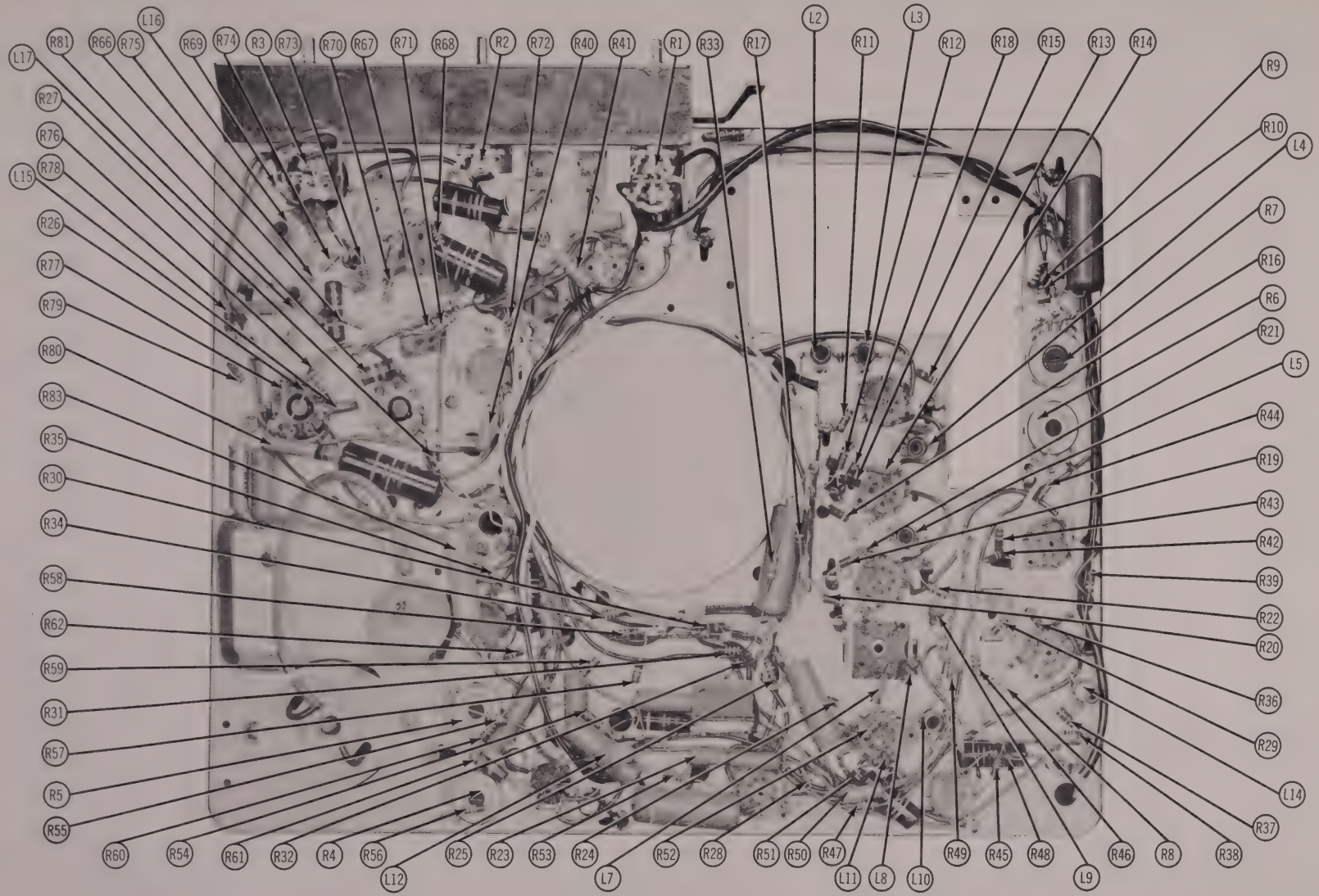


RF TUNER

SET 422 FOLDER 2



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st Video IF Amp	3BZ6	
V2	2nd Video IF Amp	3BZ6	
V3	3rd Video IF Amp	3CB6	
V4	Video Output-2nd Sync Amp	6CS6	
V5	AGC Keying-Vert Osc	5AN8	
V6	Audio Det	3BN6	
V7	Audio Output	5AQ8	
V8	1st Sync Amp	3AU6	
V9	Sync Sep	3BY6	
V10	Vert Output	5CZ5	
V11	Horiz AFC-Horiz Osc.	6CG7	
V12	Horiz Output	12DQ6	
V13	Damper	12D4GT	
V14	HV Rectifier	1G3GT	

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	CORONADO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V15	17BZP4		17BZP4 ①	17BZP4 ②	① "Silverama" ® ② "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA CORONADO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	140	150	45X431	AFHSL-33	XA0261	FP117	TMS-24	T-055	TVL-1428
C2A	±25	300	45X431	AFH4-02-80	XC0753.2	FP218 TT50X30		Q-222.2 MT-0520	R2376 *
B	±20	300							
C	±20	50	①						
C3A	±25	300	45X430	AFH3-99-83	XC0753 7	FP330.27	TMT-26	T-115 MT-0550	TVL-3574.6
B	±60	300							
C	±40	50	①						
C4	4	50	②	PRS150V4	BBR4-50	TT50X5	TD-4-50	MT-0504	TE-1302.1

① In some versions C3C and C3C may be interchanged, or C3C may be omitted.
② Some versions may use a 5mfd @ 50VDC in this application (Part #45X418).
* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA CORONADO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	.47	200	RCP10M2474M	P388N-47		CUB2P47	GEM-3047	2TM-P47	
C6	470		60X4	BPD-00047	DD-47I	L10T47	UC-5347	5GA-T47	
C7	47		47X603	MPC-S1 47	DS-47G	L10Q47		5TCC-Q47	10%
C8	100		47X604	SI 100	DS-10I	L10T1	UC-531	5GA-T1	
C9	1000		60X1	BPD-001	DD-103	BYA5DI	DC5I1	5HK-DI	
C10	680		60X5	BPD-00068	DD-68I	L10T68	UC-5368	5GA-T68	
C11	470		60X4	BPD-00047	DD-47I	L10T47	UC-5347	5GA-T47	
C13	56								NPO 5%
C13	680		60X5	BPD-00068	DD-68I	L10T68	UC-5368	5GA-T68	
C14	68				DTZ-5S				NPO 5%
C15	1000		60X1	BPD-001	DD-103	BYA5DI	DC5I1	5HK-DI	
C16	680		60X5		MD-68I				10%
C17	680		60X5	BPD-00068	DD-68I	L10T68	UC-5368	5GA-T68	
C18	470		60X4	BPD-00047	DD-47I	L10T47	UC-5347	5GA-T47	
C19	30		48X369						N33 10%
C20	100		47X604	SI 100	DS-10I	L10TI	UC-531	5GA-T1	
C21	.1	400	RCP10M4104M	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C23	1500	1400	47X753	HVH15-1000	DD20-102	HVB16X	DC5021	20GA-DI	
C24	.47	200	RCP10M2474M	P388N-47	DF-503	CUB2P47	GEM-3047	2TM-P47	
C34	3.3		47X389			CTA8V33C	ZT-5333	5TCCB-V33	
C26	1000		60X26						10%
C26	15		47X373						N330 10%
C27A	1000		60X3	BPD-2X001	DD2-102	BYD5DDI	DCD5I1	5HK-2DI	
B	1000								
C28	5000		47X507	BPD-006	DD-502	BYA10D5	DC525	5HK-D5	
C29	5000		47X507	BPD-006	DD-502	BYA10D5	DC525	5HK-D5	
C30	0041	600	RCP10M4472M	P488N-0047	DS-472	CUB6D47	GEM-6347	6TM-D47	
C31	1000		60X1	BPD-001	DD-103	BYA5DI	DC5I1	5HK-DI	
C33	5000		47X507	BPD-006	DD-502	BYA10D5	DC525	5HK-D5	
C33	150			BPD-0026	DD-151	L10T15	UC-5315	5GA-T15	①
C34	.047	400	RCP10M4473M	P488N-047	DF-503	CUB4P47	GEM-4147	4TM-S47	
C36	.047	400	RCP10M4473M	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C36	01	400	RCP10M4103M	P488N-01	DS-103	CUB4SI	GEM-411	4TM-SI	
C37	.047	600	RCP10M6473M	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C38	.047	200	RCP10M4473K	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C39	01	400	RCP10M4103M	P488N-01	DS-103	CUB4SI	GEM-411	4TM-SI	
C40	.1	600	RCP10M6104M	P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C41	.047	400	RCP10M4473K	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C42	.047	400	RCP10M4473K	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C43	.047	200	RCP10M2473M	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C44	18		RCM20B180K	1469-000018	DD-180	22R5Q18		MS-418	10%
C45	82		RCM20B820K	1469-000082	DD-820	22R5Q82		MS-482	10%
C46	100		RCM20B101K	1469-0001	DD-101	22R5T1	MCB235	MS-31	10%
C47	.047	400	RCP10M4473M	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C48	.047	200	RCP10M2473M	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C49	.022	200	RCP10M2223M	P288N-022	DD-303	CUB2S22	GEM-4223	2TM-S22	
C50	.47	200	RCP10M2474M	P288N-47		CUB2P47	GEM-3047	2TM-P47	
C51	330		RCM20B331K	1469-00033	MD-331	22R5T33		MS-333	10%
C52	01	400	RCP10M4103M	P488N-01	DS-103	CUB4SI	GEM-411	4TM-SI	
C53	330		RCM20B331K	1469-00033		1R5T33		MS-331	10%
C54	170- 700		17A271						
C55	1000		60X1	BPD-001	DD-102	BYA5DI	DC5I1	5HK-DI	
C56	.047	400	RCP10M4473M	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C57	.047	400	RCP10M4473M	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C58	.1	600	RCP10M6104M	P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C59	150	5000	47X756						N1500 10%
C60	1000		60X1	BPD-001	DD-102	BYA5DI	DC5I1	5HK-DI	
C61	.22	400	RCP10M4224M	P488N-22		CUB4P22	GEM-4022	4TM-P22	
C62A	1000		60X3	BPD-2X001	DD2-102	BYD5DDI	DCD5I1	5HK-2DI	
B	1000								
C63	1000		60X1	BPD-001	DD-102	BYA5DI	DC5I1	5HK-DI	②

① Some versions may use 330mmf in this application as part of a component combination.
② Not used in some versions

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA CORONADO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500Ω	½	78X34				UE1238	Contrast
B	2meg	½					Not Req.	Volume
C	Switch						Not Req.	Push-Push
R2A	500K	½	40X435	AB-59	A47-500K-Z	QU-133	U50	Brightness
B	Shaft			AK-19	RS-3/16	NQ	DS-37	
R3A	50K	½	78X35	F1-29				Horiz. Hold
B	2meg	½		R3-67			■(E)E3856	Vert. Hold
R4A	50K	½	40X445	AB-31	B47-50K-S	QU-123	PTA54L	Vert. Lin.
B	Shaft			AK-19	Not Req.	TQ	Not Req.	
R5A	2.5meg	½	40X396	AB-53	B47-2.5meg-S	QU-239	SU-585	Height
B	Shaft			AK-19	Not Req.	TQ	Not Req.	
R6A	2.5meg	½	40X396	AB-53	B47-2.5meg-S	QU-239	SU-585	Sync Stab
B	Shaft			AK-19	Not Req.	TQ	Not Req.	
R7A	1.5meg	½	40X437	AB-742	B47-1.5meg-S	QU-138	PTA1254L	Range
B	Shaft			AK-19	Not Req.	TQ	Not Req.	
R8	500Ω	1(WW)	40X397		39-500		FL-500	Buzz

■ "STA-LOC" Equivalent : FA54L, OF1000, RU36L, EB625.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	CORONADO PART No.	NOTES
R9	390K		B84824	
R10	680K		B84684	
R11	4700Ω		B84472	
R12	470Ω		B85471	
R13	47Ω 5%		B83470	
R14	68K		B84683	
R15	1000Ω		B85102	
R16	470Ω		B85471	
R17	470Ω		B85471	
R18	47Ω 5%		B83470	
R19	22K		B84223	
R20	470Ω		B85471	
R21	180Ω		B84181	
R22	3900Ω 5%		B83392	
R23	5000Ω	4	43X336	
R24	47Ω		B84470	
R25	180K		B84184	
R26	2.2meg		B84225	
R27	100K		B85104	
R28	270K		B84274	
R29	33K		B84333	
R30	100K		B84104	
R31	330K		B84334	
R32	100K		B84104	
R33	470K		B84474	
R34	47K		B84473	
R35	47K		B84473	
R36	100Ω		B84101	Note 1
R37	680Ω		B84681	
R38	330K		B84334	
R39	4700Ω		B84472	
R40	470Ω	1	C85471	
R41	330Ω	1	C84331	
R42	10K		B84103	
R43	10K		B84103	
R44	6800Ω		B84682	
R45	270K		B84274	
R46	47K		B84473	
R47	820K		B84824	

ITEM No.	RATING OHMS	RATING WATT	CORONADO PART No.	NOTES
R48	2.2meg		B84225	
R49	270K			Note 2
R50	27K	1	C84273	
R51	47K		B84473	
R52	4700Ω		B84472	
R53	47K		B84473	
R54	820K		B84824	
R55	390K		B84394	
R56	270K		B84274	Note 3
R57	10K 5%		B83103	
R58	10K 5%		B83103	
R59	10K 5%		B83103	
R60	18K		B84183	Note 4
R61	470Ω	1	C84471	
R62	22K		B84223	
R63	220Ω			
R64	3.5ΩCold			
R65	220Ω			
R66	230K		B84234	
R67	330K		B84334	
R68	820K		B84824	
R69	120K		B84124	
R70	82K		B84823	
R71	330K		B84334	
R72	3900Ω		B84392	
R73	82K		B84823	
R74	22K		B84223	
R75	10K		B85103	
R76	56K		B84563	
R77	1meg		B84105	
R78	1meg		B84105	
R79	68Ω		B85680	
R80	10K	2	D84103	
R81	100Ω	2	D84101	
R82	4700Ω		B84472	
R83	1700Ω	10	43X394	
R84	7Ω	15	43X303	
R85	5Ω	20	43X302	

Note 1. Not used in some versions.
Note 2. Some versions may use 150K in this as part of a component combination.
Note 3. Some versions may use 470K in this application.
Note 4. Some versions may use 15K in this application.

COILS (RF-IF)

ITEM No	USE	REPLACEMENT DATA CORONADO PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Trans.	9A2417					
L2	39MC Coil	9A2369		TV-152	4206		
L3	1st. Video IF	9A2365	17-4534	TV-131		VF-4	
L4A	47.25MC Trap	9A2363	17-4536		6222		
B	2nd. Video IF						
L5A	41.25MC Trap	9A2414	17-4535		6221		
B	3rd. Video IF						
L6A	4th. Video IF	9A2370	17-4514 *				Includes M3, and Cape.
B	Resonant Choke						
L7	Resonant Choke	9A2375					
L8	Shunt Peaking Coil	36A12	19-3160	TV-196	6120	VP-5	160 Microhenries
L9	Shunt Peaking Coil	35A36	19-3100	TV-194	6112	VP-3	100 Microhenries
L10	4.5MC Trap	9A2366	20-1004	TV-151	1469 †	SP-3	
L11	Series Peaking Coil	36A63	19-3160	TV-196	6120	VP-5	150 Microhenries
L12	Shunt Peaking Coil	35A5	19-4301	TV-194	6180	VP-5	190 Microhenries
L13	Sound IF	9A2434		TV-154			
L14	Quadrature Coil	9A2367	20-1005	TV-121	1460		
L15	RF Choke	9A2360		SW-631	4609		5 Microhenries

* Enlarge mounting holes. † Disregard tap.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA CORONADO PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L16	77Ω *		9A2416		TV-165	6212		RH-7	Horiz. Freq. * Tapped @ 54Ω
L17	59Ω		9A2372						Horiz. Waveform

FILTER CHOKE

ITEM No	RATINGS CURRENT (Measured)	RATINGS DC RES	RATINGS INDUCTANCE (0 CURRENT 1000 ^)	REPLACEMENT DATA CORONADO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L18	.320A	40Ω	1 Hy.	52X95-7					26C44 ①	

① Drill new mounting hole.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA CORONADO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	Vert. Osc.	54X09	B6702	A-3003	V405	A-8125	28A03	A-97X	
T2	Vert. Output	51X191					36S84	A-113X ②	
T3 A	Yoke-Horiz. (19MH) (110°)-Vert (03MH)	9A2415			Y-110 ②①	DY-27A ①	Y-52 ①	Y-60 & NW23	
B	Rear Cover & Centering Device	2A486							
	Yoke Clamp	30X626							
T4	Horiz. Output	53X366							

① Use original rear cover and centering device, horizontal damping network.
② Connect yoke terminal #2 to yoke plug pin #4, yoke terminal #1 and #3 to yoke plug pin #3, yoke terminal #1 to yoke plug pin #2.
③ Connect as autoformer

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA CORONADO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	6100Ω	3-4Ω	51X185	21110	A-3028	AU-803 ①	A-3877 ①	24S51 ①	S-6X	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA CORONADO PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	12A541	4A07	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	CORONADO PART No.	REPLACEMENT DATA	
K1	Vert. Integrator	2000mmf, 5000mmf, 5000mmf, 6300Ω, 6300Ω, 22k	78X7	Aerovox Centralab Cornell-Dubilier Sprague	PA-110 PC-104 1157M1 Y-1/Y-3
K2	Chassis Isolation	470mmf 1500V ,.3-1meg	76X11	Centralab Sprague	RC-471 AC1-1

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA CORONADO PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.320A	66X19 ①		1N1007 ②	SD-94 ①	40K ①	① Silicon Type.
M2	.320A	66X19 ①		1N1007 ②	SD-94 ①	40K ②	② Germanium Type.

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA CORONADO PART No.	CBS PART No.	SYLVANIA PART No	NOTES
M3	1N60 *		1N60	1N295	Video Detector (Pigtail) * Some versions may use a CK706A in this application.

MISCELLANEOUS

ITEM No.	PART NAME	CORONADO PART No.	NOTES
M4	Tuner	25A1169	VHF (Standard Coil Part #FNS-053)
M5	Circuit Breaker	2A475	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	17X197-2	
Mask	42X349-1	
Knob	10A923-1	Channel Selector
Knob	10A924-1	Fine Tuning
Knob	10A921-6	Volume
Knob	10A922-1	Contrast
Knob	10A922-3	Brightness
Handle	8-38A334	
Cabinet	26A566	Top
Cabinet	26A565	Bottom

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8876
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8494 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

CORONADO MODEL TV2-9394B

FOLDER 2

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	2BN4	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	5CG8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	120		13L8DB121K	BPD-00012	DD-121	L10T12	UC-5312	5GA-T12	
C202	30		13M320EA300NH-Z3						
C203	15		13L8GP150K	N750-DI 15	DTN-15	C10Q15U		5TCU-Q15	N750 10%
C204	15		13L8GP150J	BPD-000015	DD-150	L10Q15	UC-5415	5GA-Q15	
C205	800		13M320EA801Z-Z3						
C206	2-8		31B-206-07						
C207	47		13M130U470J-01						
C208	2-8		31B-206-01						
C209	800		13M320EA801Z-Z3						
C210	1.0		13D-111-35	NPO-SI 1.0	TCZ-1			5TCCB-V1	①
C211	51		13L10T510K						N470 10%
C212	2-8		31B-206-01						
C213	1000		31J-024	BPD-001	DD-102	BYA8D1	DC521	5HK-D1	
C214	10		13L8U100D						N470
C215	10		13LUA100D						N1400
C216	1.5			NPO-SI 1.5	TCZ-1R5	C10V15C	ZT-5515	5TCCB-V15	NPO ②
C217									
C218	30		13M320EA300NH-Z3						
C219	1000			BPD-001	DD-102	BYA8D1	DC521	5HK-D1	
C220	800		13M320EA801Z-Z3						

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		PART No.	NOTES
	OHMS	WATT		
R201	4700Ω		12TAE472M	
R202	1000Ω		12TAE102M	
R203	10K		12TAE103M	
R204	220K		12TAE224M	

ITEM No.	RATING		PART No.	NOTES
	OHMS	WATT		
R205	10K		12TAE103M	
R206	1000Ω		12TAE102M	
R207	10K		12TAE103M	
R208	5600Ω		12TAE562M	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	PART No.	REPLACEMENT DATA	
K201	Antenna Isolation	470mmf, .2-1meg	13P-198	Centralab Sprague	RC-471 R-9197
K202	Antenna Isolation	470mmf, .2-1meg	13P-198	Centralab Sprague	RC-471 R-9197

NOTE: PART NUMBERS LISTED ABOVE ARE "STANDARD COIL" PART NUMBERS.

TUNER ALIGNMENT INSTRUCTIONS

OSCILLATOR ALIGNMENT

Touch-up adjustment of the VHF Oscillator is possible by removing the rear cover, and supplying power to the receiver. Set the Fine Tuning at the center of its range. The adjustments are accessible, one at a time, thru a hole in the right side of the tuner rear cover as viewed from the rear. Adjust for best picture and sound.

RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

CHASSIS TOP VIEW

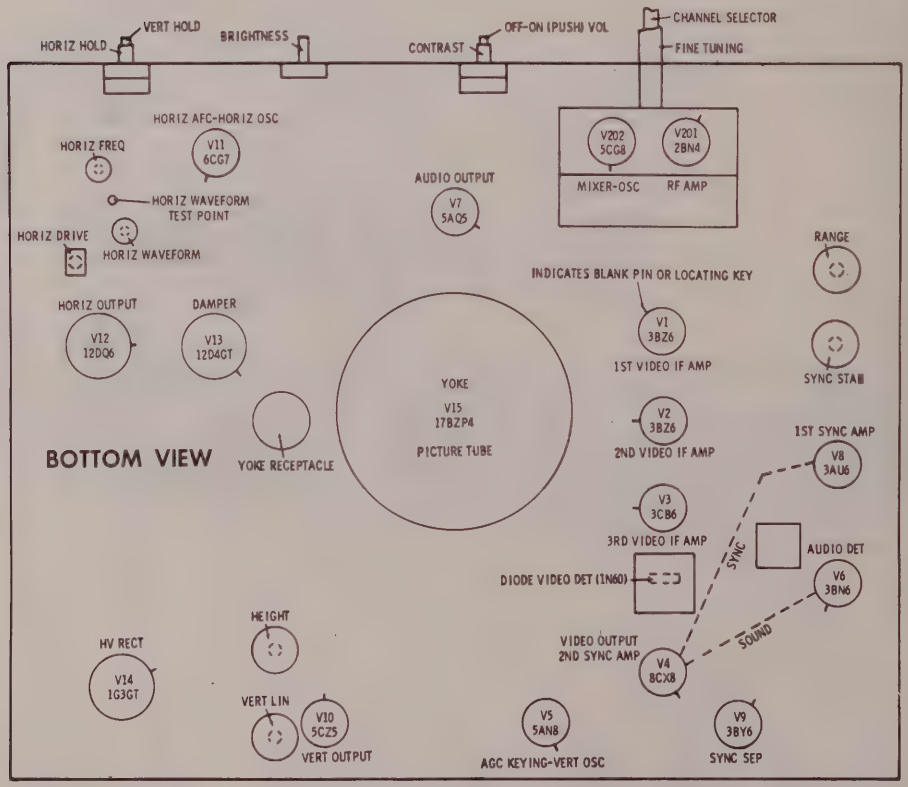
CORONADO
MODELS TV2-9394B

FOLDER 2

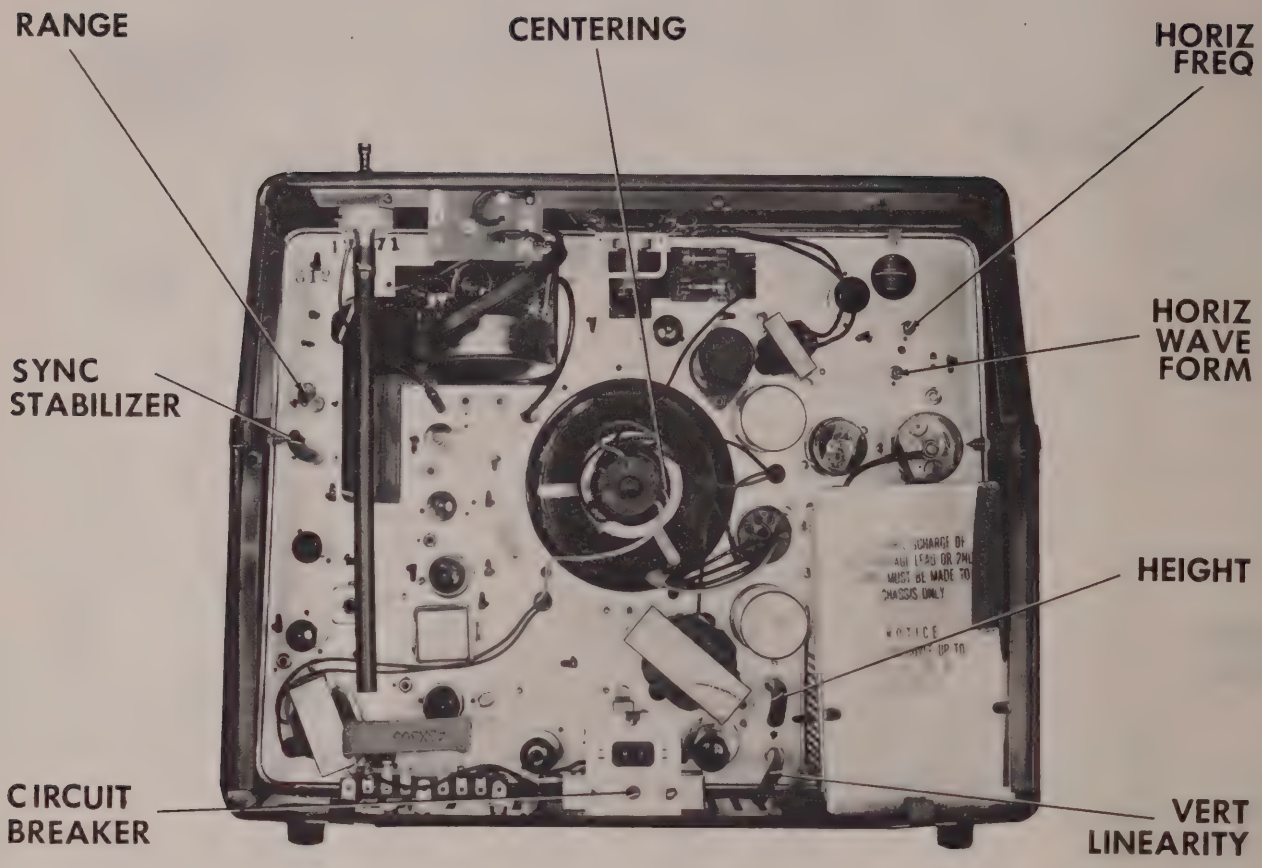
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BZ6	570K	47Ω	17Ω	16Ω	†2600Ω	†2600Ω	0Ω		
V2	3BZ6	570K	47Ω	16Ω	15Ω	†2600Ω	†2600Ω	0Ω		
V3	3CB6	.1Ω	180Ω	15Ω	14Ω	†2100Ω	†2100Ω	0Ω		
V4	8CX8	0Ω	47K	†49K	12Ω	10Ω	• 320Ω	1200Ω	†1700Ω	†5000Ω
V5	5AN8	• ‡1.4meg	1.2meg	175Ω	18.5Ω	20Ω	300K	†0Ω	†35K	†1700Ω
V6	3BN6	• 330Ω	106Ω	13Ω	12Ω	†6400Ω	6.5Ω	†330K		
V7	5AQ5	0Ω	330Ω	17Ω	18.5Ω	†880Ω	†470Ω	0Ω		
V8	3AU6	5000Ω	†8500Ω	14Ω	13Ω	†8500Ω	†8500Ω	0Ω		
V9	3BY6	• 750K	0Ω	21.5Ω	20Ω	†820K	†29K	2.2meg		
V10	5CZ5	†0Ω	NC	270K	21.5Ω	22.5Ω	270K	470Ω	NC	†430Ω
V11	6CG7	†56K	410K	0Ω	10Ω	8.5Ω	• †30K	1.5meg	410K	0Ω
V12	12DQ6	TP	7Ω	TP	†10K	1meg	TP	4.5Ω	100Ω	TOP CAP ‡16Ω
V13	12D4GT	TP	NC	¶800K	NC	†.1Ω	NC	4.5Ω	2Ω	
V14	1G3GT		PINS	1 THRU 8	HAVE	INFINITE	RESISTANCE			TOP CAP ‡371Ω
V15	17BZP4	7Ω	22K	†100K	†100K	NC	NC	• 230K	8.5Ω	
V201	2BN4	0Ω	700K	0Ω	.5Ω	†2700Ω	0Ω	700K		
V202	5CG8	10K	†7300Ω	0Ω	2Ω	.5Ω	†2700Ω	†11K	0Ω	230K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 260V SOURCE. NC NO CONNECTION.
‡ MEASURED FROM PIN 3 OF V13. TP TIE POINT.



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the Horizontal Hold fully clockwise. Tune in a station and adjust the Horizontal Frequency (B1) until the picture is just about to tear out of sync (jitter at the top of the picture).

Turn the Contrast fully counterclockwise and the Brightness clockwise so that the picture appears washed out. Turn the Horizontal Drive (B2) clockwise until white vertical bars (drive lines) appears in the left center portion of the raster, then counterclockwise until the white bars just disappear.

Connect the vertical amplifier of a scope to point Ⓒ. Low side to chassis. Adjust the Horizontal Waveform (B3) until the round and sharp peaks are equal in amplitude. (See Fig. 3). Keep the picture in sync during this adjustment.

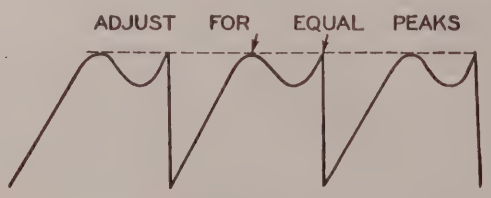


FIG. 3

PHOTOFACT* Folder

with CIRCUITRACE*

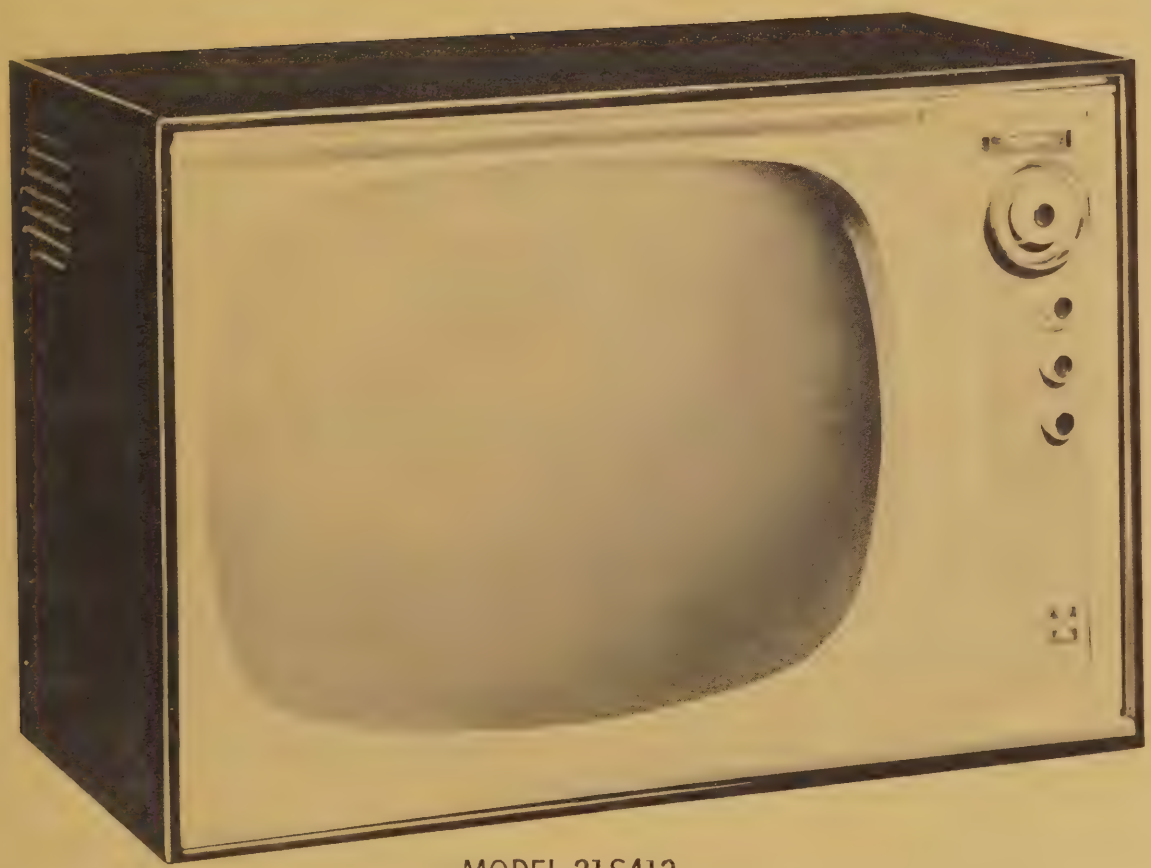
HOTPOINT MODELS 17S320, 17S321, 17S322, 21S412, 21S420, 21S421, 21S530, 21S531, 21S532, 21S533, 21S630, 21S631 & UHF (M4 Line)

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

HOTPOINT MODELS 17S320, 17S321, 17S322, 21S412, 21S420, 21S421, 21S530, 21S531, 21S532, 21S533, 21S630, 21S631 & UHF (M4 Line)



MODEL 21S412

HOTPOINT MODELS 17S320, 17S321, 17S322, 21S412, 21S420, 21S421, 21S530, 21S531, 21S532, 21S533, 21S630, 21S631 & UHF (M4 Line)

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SET 422 FOLDER 3

HOTPOINT MODELS 17S320, 17S321, 17S322, 21S412, 21S420, 21S421, 21S530, 21S531, 21S532, 21S533, 21S630, 21S631 & UHF (M4 Line)

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 6 push-on type knobs from the front.
2. Remove 11 metal screws holding the rear cover. Remove the rear cover.
3. Remove the picture tube socket, yoke clamp, yoke, HV lead and speaker leads.
4. Remove 1 metal screw holding the top chassis support bracket to the front. (Located inside the cabinet.)
5. Remove 4 (5 in some versions) chassis bolts from the bottom.
6. Remove the chassis.

MODEL 21S412

TRADE NAME	Hotpoint	MODELS
		17S320, 17S321, 17S322, 21S412, 21S420, 21S421, 21S530, 21S531, 21S532, 21S533, 21S630, 21S631 & UHF (M4 Line)
MANUFACTURER	Hotpoint Co., 5600 W. Taylor St., Chicago 44, Illinois	
TYPE SET	Television Receiver	
TUBES	Sixteen	
POWER SUPPLY	110-125 Volts AC, 60 Cycle	RATING 190 Watts, 1.74 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)	

HOTPOINT MODELS 17S320, 17S321, 17S322, 21S412, 21S420, 21S421, 21S530, 21S531, 21S532, 21S533, 21S630, 21S631 & UHF (M4 Line)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF Oscillator is possible by removing the Channel Selector and Fine Tuning knobs. Set the Fine Tuning at the center of its range. One slug for HIGH band adjustment is located at 3 o'clock, and should be adjusted first. The LOW band adjustment is located at 11 o'clock. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

For picture tube, and safety glass cleaning, it is necessary to remove the chassis. (See disassembly instructions.)

FOCUS

No provision is made to vary the focus on this receiver. Some versions may be equipped with a Beam Alignment magnet. Adjust for best focus consistent with maximum brightness.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

For adjustment of the Horizontal Oscillator, it is necessary to remove the rear cover and supply power to set. Set the Horizontal Hold at the center of its range and adjust the Horizontal Frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart.)

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Ratio Detector secondary (A10) located on top of chassis.

FUSES

Two fuses are used. One for horizontal sweep circuit protection and one for low voltage power supply protection. A fuse wire is used for filament protection.

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

SET 422 FOLDER 3

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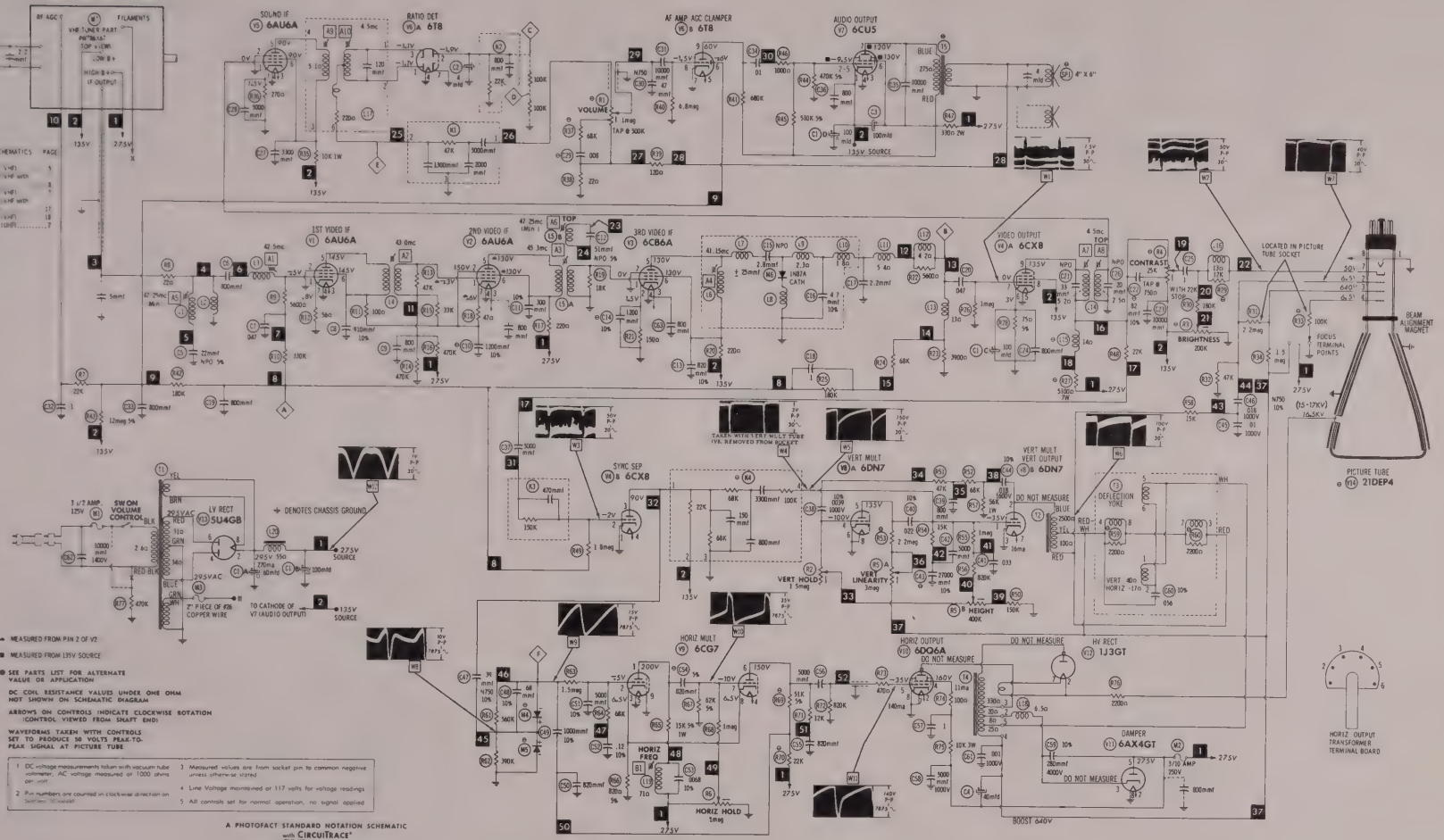
H71IR

DATE 11-58 SET 422 FOLDER 3


ADDITIONAL SCHEMATICS PAGE
TUNER #T8X7 (VHF) 5
TUNER #T8X8 (VHF with UHF provision) 8
TUNER #T8X9 (VHF) 11
TUNER #T8X70 (VHF with UHF provision) 12
TUNER #T8X71 (VHF) 18
TUNER #T8X72 (UHF) 7
RF AGC
FILAMENTS
VHF TUNER PART #T8X67
TOP VIEW
HIGH B+ IF OUTPUT
VHF ANT. TERMINAL BOARD
SOUND IF V5 6AU6A
RATIO DET V6 A 6T8
AF AMP AGC CLAMPER V6 B 6T8
AUDIO OUTPUT V7 6CU5
VOLUME
135V SOURCE
1ST VIDEO IF V1 6AU6A
2ND VIDEO IF V2 6AU6A
3RD VIDEO IF V3 6CB6A
VIDEO OUTPUT V4 A 6CX8
CONTRAST
BRIGHTNESS
LOCATED IN PICTURE TUBE SOCKET
BEAM ALIGNMENT MAGNET
FOCUS TERMINAL POINTS
PICTURE TUBE V14 21DEP4
SYNC SEP V8 B 6CX8
VERT MULT V8 A 6DN7
VERT MULT VERT OUTPUT V8 B 6DN7
DEFLECTION YOKE
VERT HOLD
VERT LINEARITY
HEIGHT
DO NOT MEASURE
3 1/2 AMP 125V
SW ON VOLUME CONTROL
LV RECT V13 5U4GB
295VAC
DENOTES CHASSIS GROUND
TO CATHODE OF V7 (AUDIO OUTPUT)
HORIZ MULT V9 6CG7
HORIZ FREQ
HORIZ HOLD
HORIZ OUTPUT V10 6DQ6A
HV RECT V12 1J3GT
DAMPER V11 6AX4GT
HORIZ OUTPUT TRANSFORMER TERMINAL BOARD
BOOST 640V
MEASURED FROM PIN 2 OF V2
MEASURED FROM 135V SOURCE
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE
1 DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt
2 Pin numbers are counted in clockwise direction on bottom (component) side
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®
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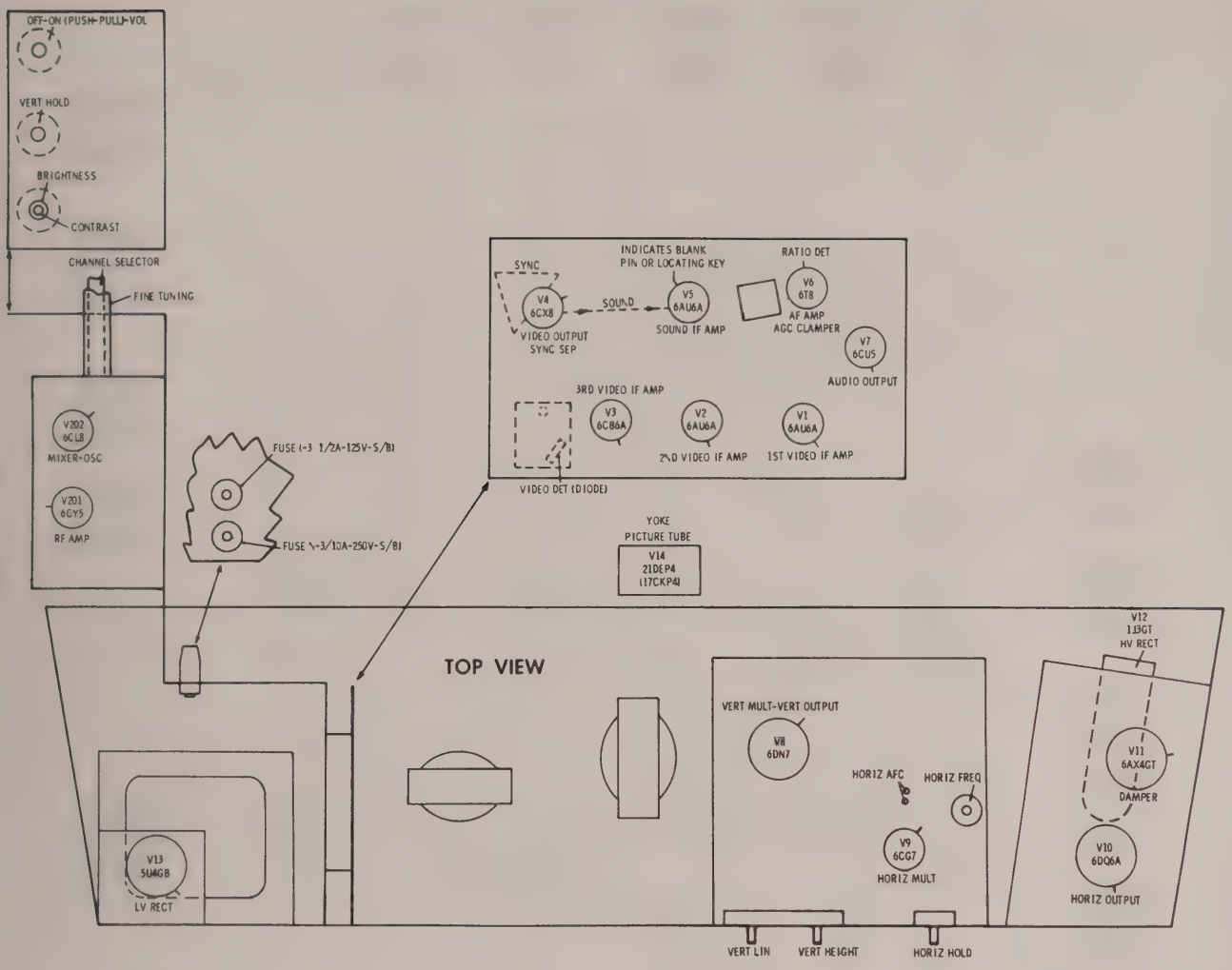
HOTPOINT MODELS 175320, 175321, 175322, 215412, 215420, 215421, 215530, 215531, 215532, 215533, 215630, 215631 & UHF (M4 Line)

FOLDER 3

TUBE PLACEMENT CHART



HOTPOINT MODELS 175320, 175321, 175322, 215412, 215420, 215421, 215530, 215531, 215532, 215533, 215630, 215631 & UHF (M4 Line)

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

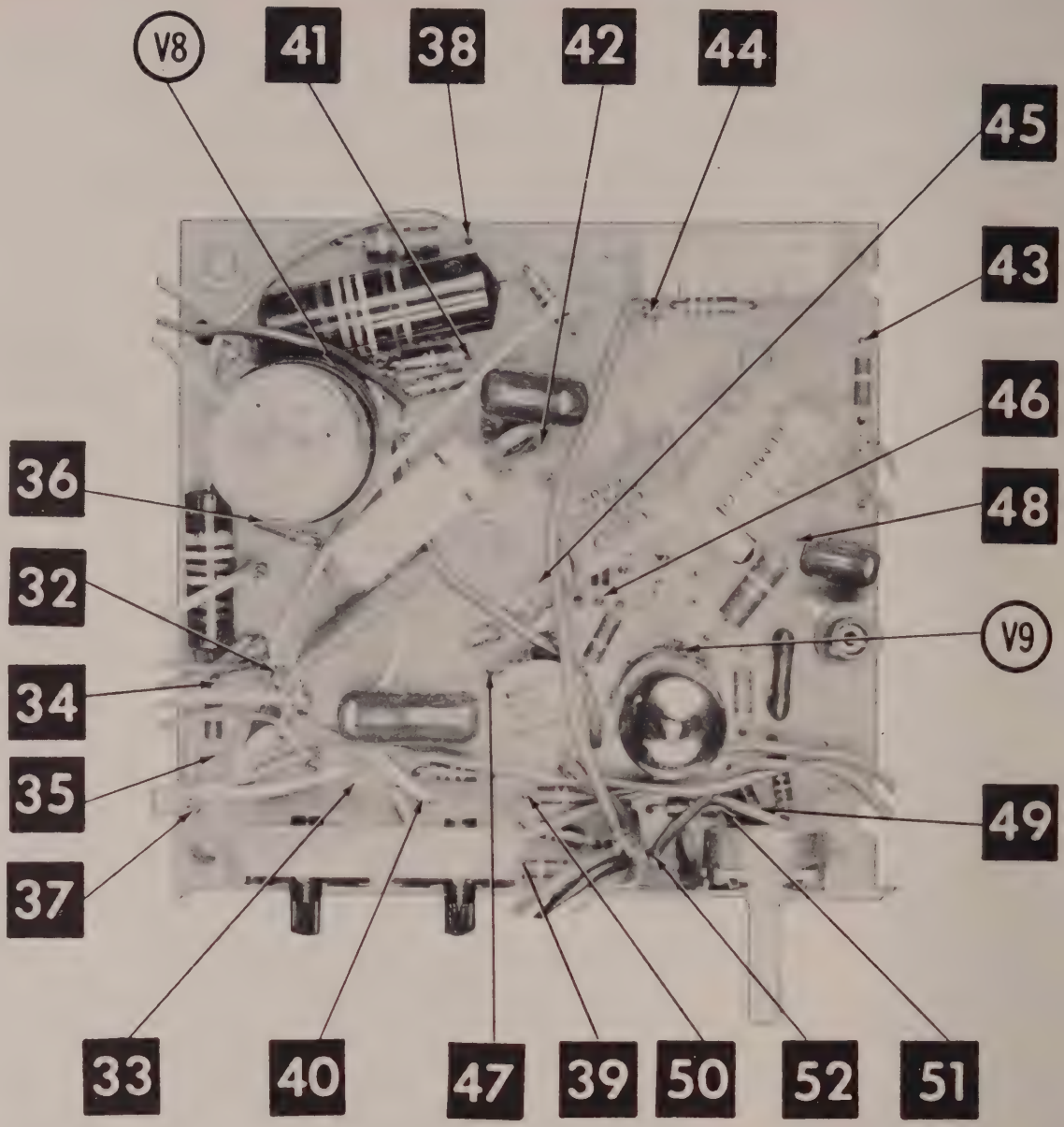
POWER SUPPLY FAILURE
No raster, no sound Fuse (M1, M3), V13

SWEEP FAILURE
No raster, has sound Fuse (M2), Rectifier (M4, M5), V9, V10, V11, V12, V14
No vertical deflection V8
Poor vert. linearity or foldover V8
Poor horiz. linearity or foldover V9, V10, V11
Narrow picture V9, V10, V11, V13
Vert. off freq. V8,
Horiz. off freq. V9

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (M5), V4, V7
No pic, no sound, has snow V201, V202, V1, V7
No pic, has sound, has raster V4, V14
Has pic, no sound V5, V6, V7

SYNC FAILURE
No vert. sync V4
No horiz. sync V4, M4, M5
No vert. or horiz. sync V4

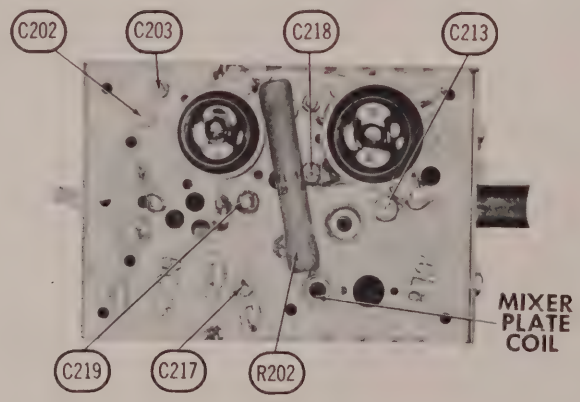
CircuiTrace Numbers 32 thru 52



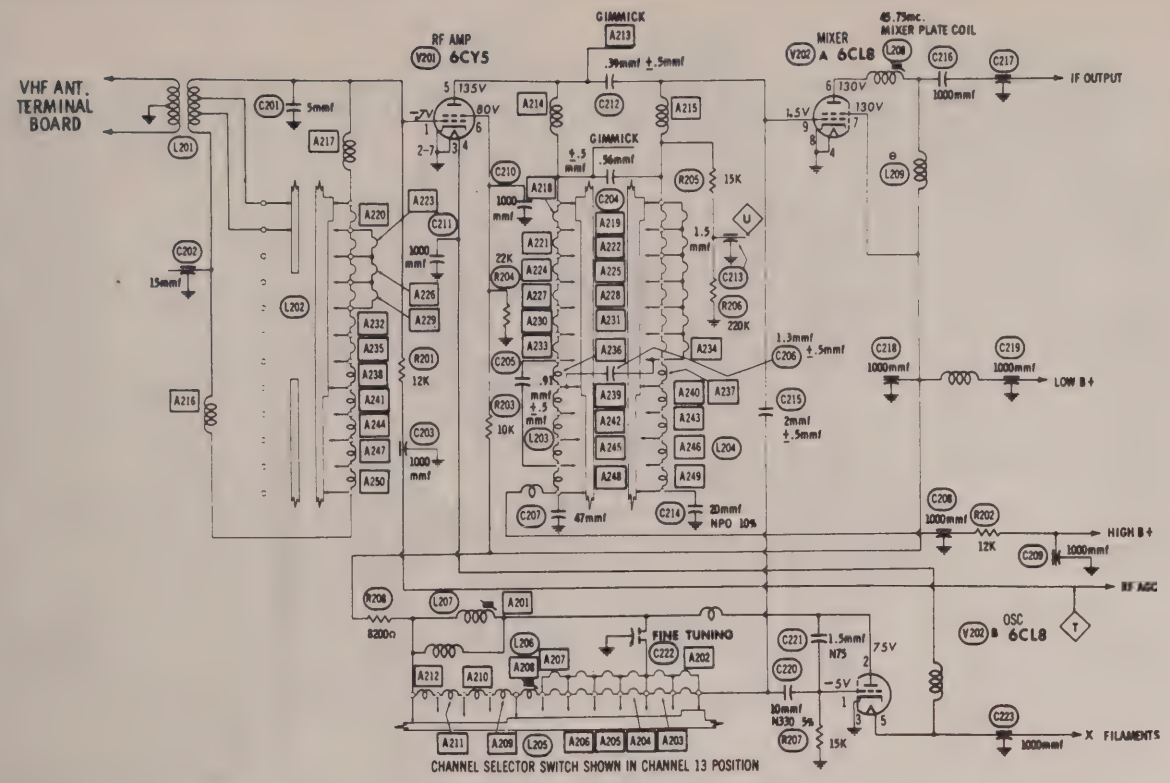
A Howard W. Sams CIRCUITRACE* Photo
*TRADE MARK

SWEEP
PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



TUNER - TOP VIEW



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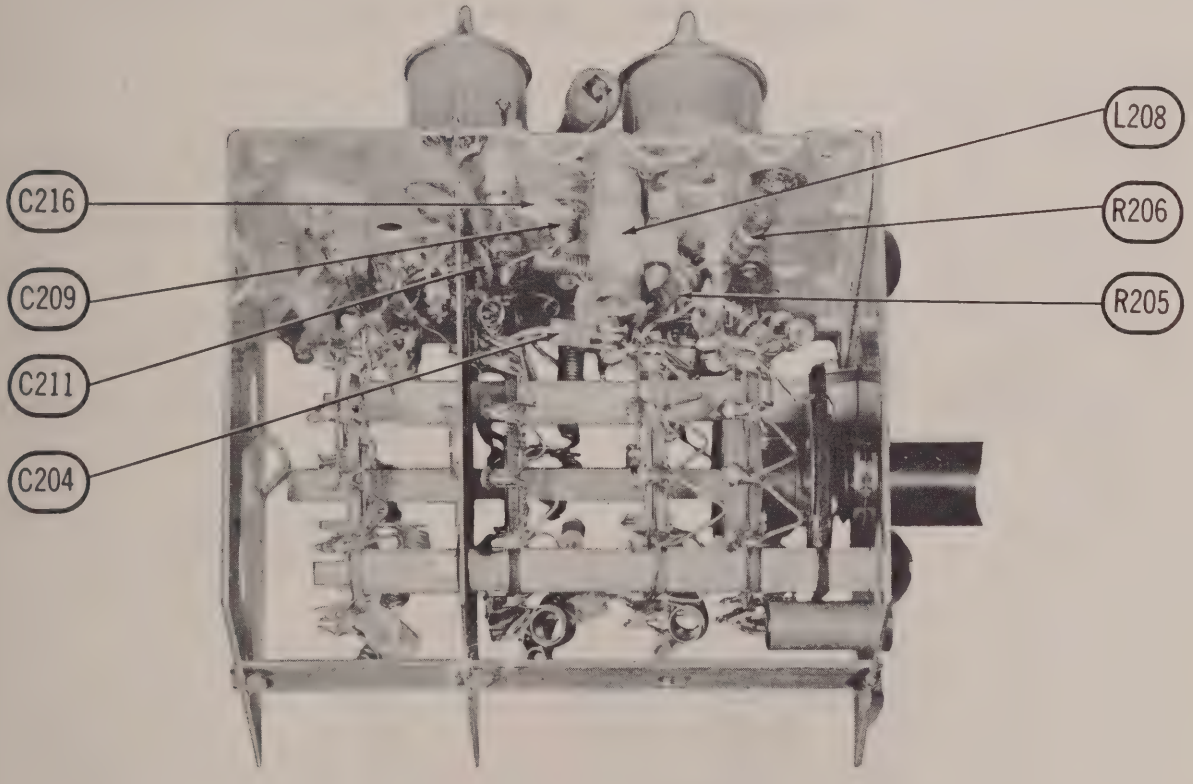
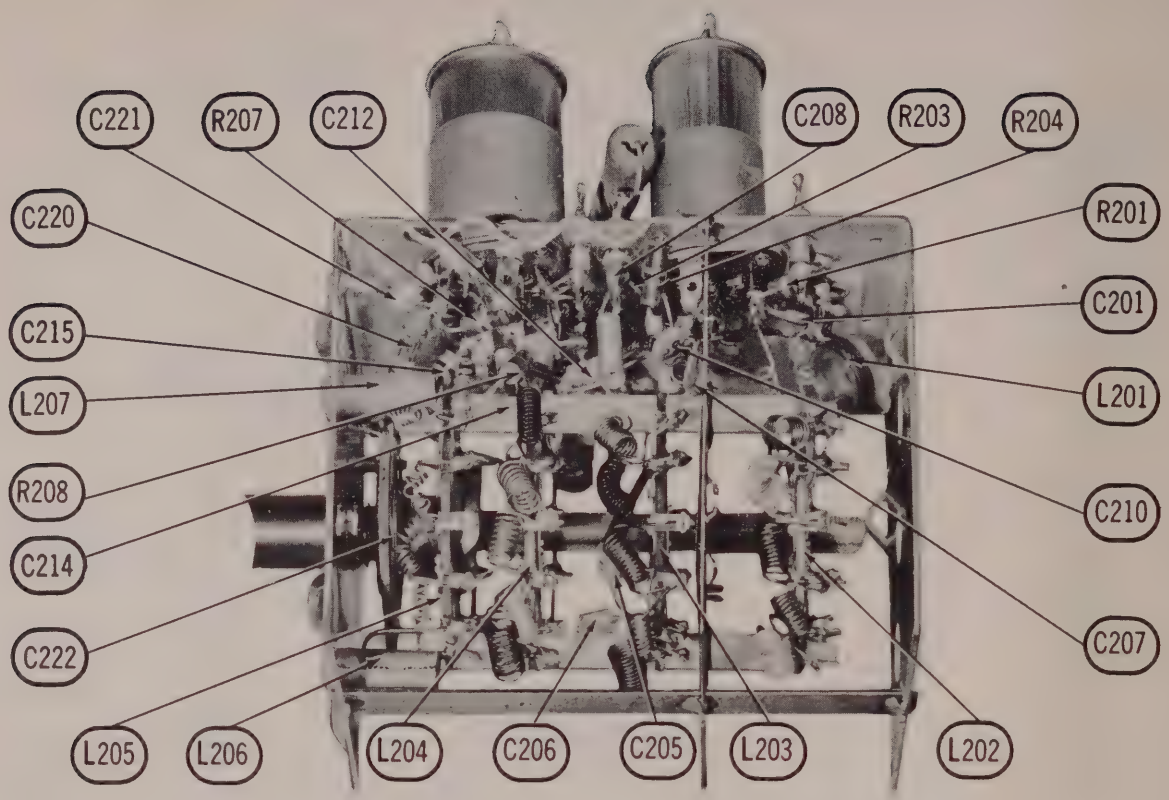
VHF TUNER #WT86X67



TUNER - LEFT SIDE



TUNER—RIGHT SIDE
TUNER WT86X67 – WT86X68

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

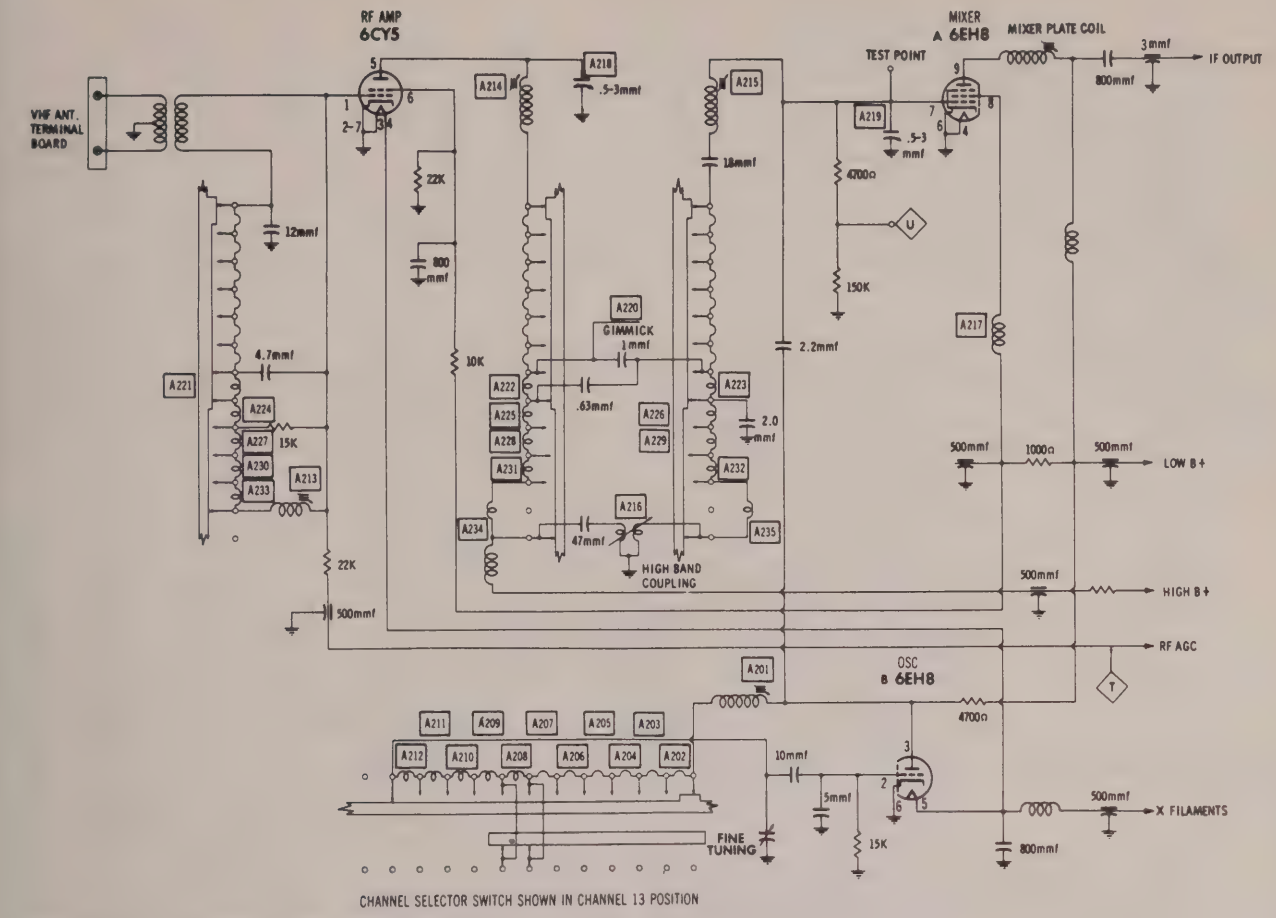
USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up receiver for the receiver and test equipment.

VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Fig. 201	Across antenna terminals thru matching network (Fig. 201).	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across video det. load.	A201	Adjust to place video marker at 50% as in Fig. 202.
			207MC	205.25MC 209.75MC	12		A202	
			201MC	199.25MC 203.75MC	11		A203	
			195MC	193.25MC 197.75MC	10		A204	
			189MC	187.25MC 191.75MC	9		A205	
			183MC	181.25MC 185.75MC	8		A206	
			177MC	175.25MC 179.75MC	7		A207	
			85MC	83.25MC 87.75MC	6		A208	
			79MC	77.25MC 81.75MC	5		A209	
			69MC	67.25MC 71.75MC	4		A210	
			63MC	61.25MC 65.75MC	3		A211	
			57MC	55.25MC 59.75MC	2		A212	

CONTINUED ON PAGE 19



CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION

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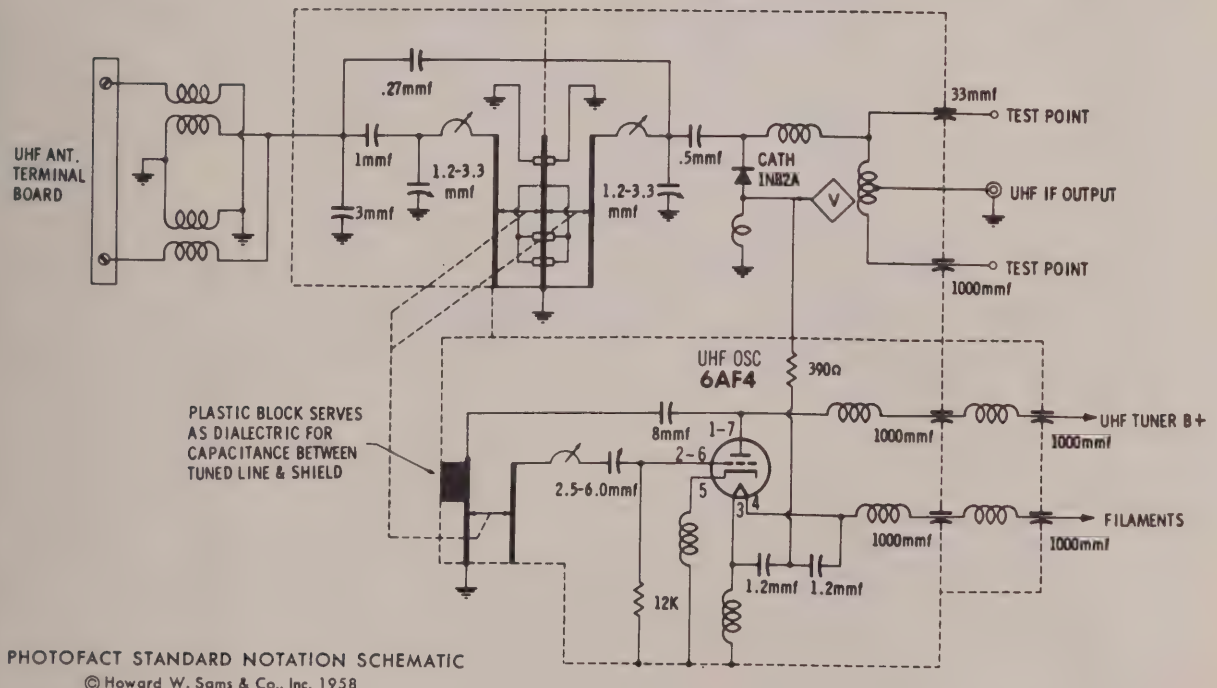
VHF TUNER #WT86X69



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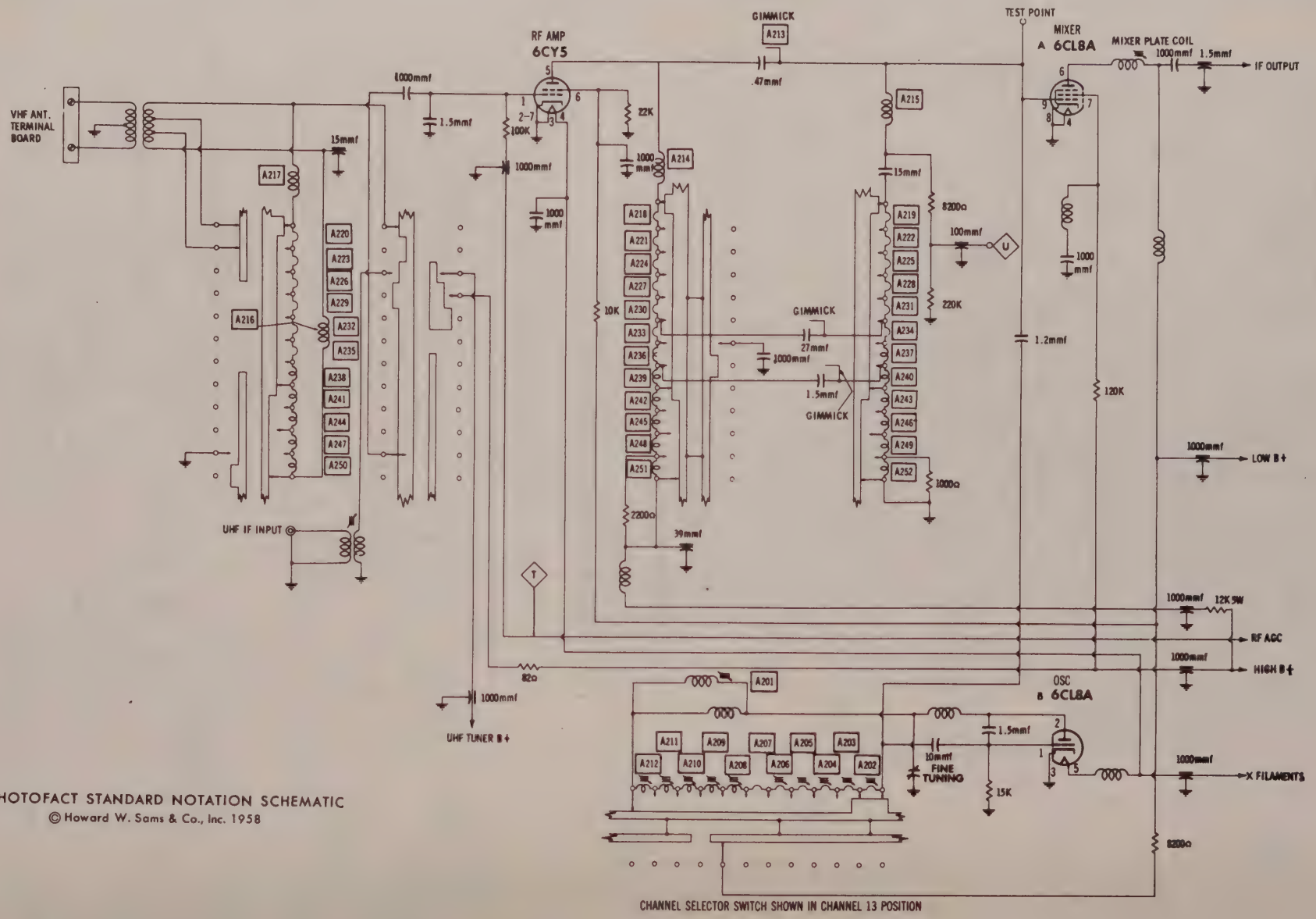
UHF TUNER #WT85X23



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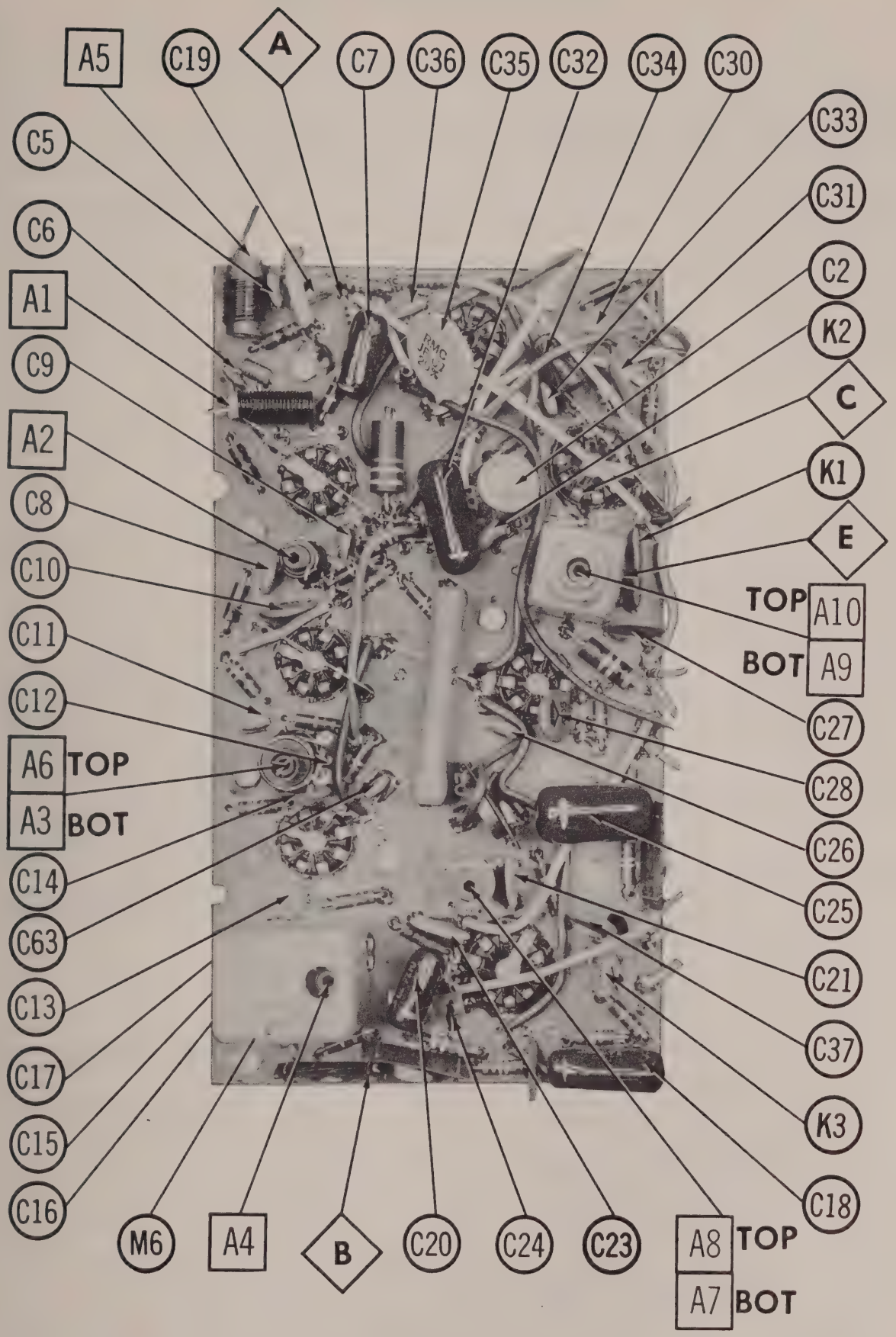
VHF TUNER W/UHF PROVISIONS #WT86X68



VIDEO IF PRINTED BOARD - CAPACITOR & ALIGN IDENT

TUNER WT86X69, WT86X70
ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT .
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Fig. 201	Across antenna terminals thru matching network (Fig. 201).	213MC	211.25MC	13	Vert. Amp. thru 47K across video det. load.	A201	Adjust to place sound marker in trap notch as in Fig. 202.
			207MC	205.25MC	12		A202	
			201MC	199.25MC	11		A203	
			195MC	193.25MC	10		A204	
			189MC	187.25MC	9		A205	
			183MC	181.25MC	8		A206	
			177MC	175.25MC	7		A207	
			85MC	83.25MC	6		A208	
			79MC	77.25MC	5		A209	
			69MC	67.25MC	4		A210	
			63MC	61.25MC	3		A211	
			57MC	55.25MC	2		A212	

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point (T). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Fig. 201	Across VHF antenna terminals thru matching network (Fig. 201).	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K to point (U). Low side to chassis.	A213, A214, A215, A216, A217	Adjust for maximum gain and symmetry similar to Fig. 203 with markers as shown. Adjust bandwidth by changing position of A216 with respect to capacitor. If dip is excessive, adjust A217 only SLIGHTLY to prevent loss of gain.
3.	"	"	177MC	175.25MC 179.75MC	7	"	A218, A219, A220	Adjust for maximum gain and symmetry of response similar to Fig. 203 with markers as shown. Adjust bandwidth by repositioning the "Gimmick" wire (A220) with respect to adjacent capacitor. Recheck step 2.
4.	"	"	207MC	205.25MC 209.75MC	12	"		Check for correct tilt on each channel. If necessary make compromise adjustments of A218 and A219 for best tilt on all channels.
			201MC	199.25MC 203.75MC	11			
			195MC	193.25MC 197.75MC	10			
			189MC	187.25MC 191.75MC	9			
			183MC	181.25MC 185.75MC	8			
5.	"	"	85MC	83.25MC 87.75MC	6	"	A221, A222, A223	Adjust for maximum gain and symmetry of response similar to Fig. 203 with markers as shown.
6.	"	"	79MC	77.25MC 81.75MC	5	"	A224, A225, A226	Check tracking. Adjust for proper response if necessary.
7.	"	"	69MC	67.25MC 71.75MC	4	"	A227, A228, A229	"
8.	"	"	63MC	61.25MC 65.75MC	3		A230, A231, A232	"
9.	"	"	57MC	55.25MC 59.75MC	2	"	A233, A234, A235	"

CONTINUED ON PAGE 15

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Set Volume Control fully counterclockwise and Contrast fully clockwise. Short the antenna terminals together with a short jumper wire.
Connect the negative lead of a 4 volt bias supply to point Ⓐ . Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.
The tuning core of A3 has a smaller hex opening than the other slugs. Use a smaller alignment tool. This allows A3 to be aligned without disturbing A6 as the tool is withdrawn.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Fig. 1	Connect thru network (Fig. 1) to Tuner Test jack located on top of tuner.	Not used	45.75MC (Unmod)	Any non-interfering channel	USE VTVM DC probe thru 22K to point Ⓑ . Low side to chassis. (Across Video Det. Load)	Mixer Plate Coil	Adjust for maximum deflection.
2.	"	"	"	42.5MC	"	"	A1	"
3.	"	"	"	43.0MC	"	"	A2	"
4.	"	"	"	45.3MC	"	"	A3	"
5.	"	"	"	44.15MC	"	"	A4	"
6.	"	"	"	47.25MC	"	"	A5, A6	Adjust for MINIMUM deflection.
7.	"	"	44MC (10MC Swp)	41.25MC 42.5MC 44.15MC 45.0MC 47.25MC	"	"		Check for response similar to Fig. 2 with markers as shown. If necessary, retouch proper slug(s) to obtain desired response. High frequency side of curve is controlled by Mixer Plate Coil and A3. Low frequency side is controlled by A1 and A2. Adjust A4 to control peak and shape of curve. If necessary, retouch A5 and A6 to correctly position 47.25MC marker.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.001mfd	High side to point Ⓑ . Low side to chassis.	Not used	4.5MC (400∿ 30% AM Mod)	Any non-interfering channel	Vert. Amp. thru detector probe to pin 7 (cathode) of picture tube. Low side to chassis.	A7	Adjust for MINIMUM 400∿ indication on scope.

SOUND IF ALIGNMENT

Connect two matched 100K (±1%) resistors in series from point Ⓒ to chassis. The junction of these two resistors is alignment point Ⓓ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	.001mfd	High side to point Ⓑ . Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe to point Ⓒ. Common to chassis.	A8, A9	Adjust for maximum deflection.
10.	"	"	"	"	DC probe to point Ⓔ . Common to point Ⓓ .	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGES 6, 10, 15 & 19

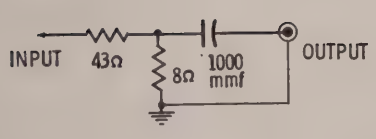


FIG. 1

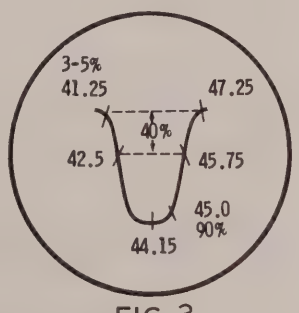


FIG. 2

HOTPOINT MODELS 175320, 175321, 175322, 215412, 215420, 215421, 215530, 215531, 215532, 215533, 215630, 215631 & UHF (M4 Line)

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st Video IF Amp	6AU6A	
V2	2nd Video IF Amp	6AU6A	
V3	3rd Video IF Amp	6CB6A	
V4	Video Output-Sync Sep.	6CX8	
V5	Sound IF Amp	6AU6A	
V6	Ratio Det - AF Amp - AGC Clamper	6T8	
V7	Audio Output	6CU5	
V8	Vert. Mult.-Vert. Output	6DN7	
V9	Horiz. Mult.	6CG7	
V10	Horiz. Output	6DQ6A	
V11	Damper	6AX4GT	
V12	HV Rectifier	1J3GT	
V13	LV Rectifier	5U4GB	

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	HOTPOINT PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V14	21DEP4 ① 17CKP4	21DEP4 ① 17CKP4 ①	17BZP4 ②	21DEP4 ③ 17CKP4 ②	① Aluminized ② Silverama ④ ③ Silver Screen 85

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP	VOLT	HOTPOINT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	●60	350	WT31X165	AFH4-97-95				-Q-187 5 -MT-18100	R2716 *
B	●200	350							
C	100	10							
D	●100	150							
C2	4	50	WT31X133	PRS430Y4	BBR4-50	TT50X5	TD-4-50	MT-0504	TVA-1402
C3	100	150	WT31X129	AFH1-21	XA0241	FP116	TMS-22	S-090	TVA-1423
C4	40	400	WT31X164	PRS450Y40	BR4045	TC78	TD-40-450	MT-4540	TVA-1712

* Non-catalog item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP	VOLT	HOTPOINT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	22		WT1X366	NPO-D1 22	DTZ-22	C1QQ22C		5TCC-Q22	NPO 5%
C6	800		WT1X84	BPD-0008	DD-801	L10T8		5GA-T8	
C7	.047	200	WT25X23	P288N-047	DF-503	CUB23Q47	GEM-4147	2TM-S47	
C8	180		WT1X378						10%
C9	800		WT1X380	BPD-0008	DD-801	L10T8		5GA-T8	
C10	1200		WT1X200						10% ①
C11	300		WT1X367		MD-301	L10T3			10%
C12	51		WT1X264						NPO 5%
C13	820		WT1X370						10%
C14	1300		WT1X200						10% ①
C15	3.3		WT1X373						NPO a. 25mmf
C16	4.7		WT1X369	NPO-SI 4.7	TCZ-4R7	CTA5Y47C	ZT-5547	5TCCB-Y47	10%
C17	2.2		WT2X23	NPO-SI 2.2	TCZ-2R2	CTA5Y22C		5TCCB-Y22	
C18	.1	200	WT25X34	P288N-1	DF-104	CUB21P1	GEM-201	2TM-P1	
C19	800		WT1X369	BPD-0008	DD-801			5GA-T8	
C20	.047	300	WT25X23	P288N-047	DF-503	CUB23Q47	GEM-4147	2TM-Q47	
C21	33		WT1X186	NPO-DI 33	DTZ-33	C1QQ33U	ZT-5533	5TCC-Q33	NPO
C22	82		WT1X327	NPO-SI 82	DE-820	CTA5Q82C			10% ③
C23	10000		WT1X289	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C24	800		WT1X84	BPD-0008	DD-801	L10T8		5GA-T8	
C25	.1	400	WT25X24	P488N-1	DF-104	CUB41P1	GEM-401	4TM-P1	
C26	20		WT1X187	NPO-SI 20	DTZ-20	C1QQ2C	ZT-542	5TCC-Q2	NPO
C27	3300		WT1X371	BPD-0033	DD-332	BYA10D33	UC-5233	5HK-D33	
C28	5000		WT1X66	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C29	.008	200		P288N-008			GEM-528	5TM-D8	③
C30	47		WT1X253	N750-DI 47	DTN-47	C1QQ47U	NT-5447	5TCU-Q47	N750
C31	10000		WT1X199	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C32	.1	400	WT25X24	P488N-1	DF-104	CUB41P1	GEM-401	4TM-P1	
C33	800		WT1X380	BPD-0008	DD-801	L10T8		5GA-T8	
C34	.01	400	WT25X33	P488N-01	DF-103	CUB401	GEM-411	4TM-S1	
C35	10000		WT1X381	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C36	800		WT1X368	BPD-0008	DD-801	L10T8		5GA-T8	
C37	5000		WT1X196	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C38	.0039	1000	WT26X16						10%
C39	800		WT1X369	BPD-0008	DD-801	L10T8		5GA-T8	
C40	.022	600	WT25X36						10%
C41	.033	200	WT25X35	P288N-033		CUB4S33	GEM-4133	6TM-S33	
C42	5000		WT1X66	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C43	27000		WT1X372						10% ①
C44	.018	1000	WT26X23						10%
C45	.01	1000		P1068N-01		CUB10S1	GEM-1011	10TM-S1	
C46	.015	1000	WT26X13						10%
C47	39		WT1X285			C1QQ39U			N750 10%
C48	56		WT1X325	N750-DI 56	DTN-56	C1QQ56U		5TCU-Q56	N750 10%
C49	1000		WT1X215						10%
C50	820		WT1X250		DD-821	L10T82		5GA-T82	
C51	5000		WT1X380						10%
C52	.12	200	WT25X34						10%
C53	.0068	400	WT25X29				GEM-16368		10%
C54	330		WT19X64	1464-00082		1R5T82		MS-362	5% ④
C55	820		WT1X250		DD-821	L10T82		5GA-T82	
C56	5000		WT1X66	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C57	.1	400	WT25X34	P488N-1	DF-104	CUB41P1	GEM-401	4TM-P1	
C58	5000	1000	WT1X375	DAC-9	DD-502	BYA10D5		5HK-D5	
C59	220	4000	WT1X274						10%
C60	.056	600	WT26X22						10%
C61	.001	1000	WT25X32	P1068N-001		CUB10D1	GEM-1021	10TM-D1	
C62	10000	1600	WT1X280	DAC-27	DDI6-103	BYE16S1		20HK8-S1	
C63	800		WT1X84	BPD-0008	DD-801	L10T8		5GA-T8	

1. Some versions may use 800mmf in this application (Part #WT18X84).
2. Not used in 17" Models.
3. Special temperature compensating.
4. Some versions may use 910mmf 5% in this application (Part #WT20X128).

CONTROLS

ITEM No	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	HOTPOINT PART No	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	1meg	½	WT49X372		RTV-673		FP16T65	Volume, Push-Pull Sw., Tap ② 500K ①
R3A	1.5meg	½	WT49X371	AB-742	A47-1.5meg -8	Q11-138	U155	Vert. Hold
B	Shaft		WT49X376	AK-2	R8-3/16	NQ	D8-37	
R3	200K	½	WT49X382					Brightness ②
R4	25K	½	WT49X381					Contrast, Tap ④ 8750Ω with 22K stop ③
R5A	3meg	½	WT49X374		B47-3meg-8	B11-140 *	PTA355L	Vert Lin.
B	400K	½			B47-500K-8	B11-133 *	PTA55R	Height
R6	1meg	½	WT49X373		B47-1meg-8	B11-137 *	PTA254L	Horiz. Hold

* Use IRC TM3 Kit for shaft assembly.
① A 1meg tap ③ 500K volume control with push-type switch used in 17" models (Part #WT49X375).
② A 200K brightness control is used in 17" models (Part#WT49X370).
③ A 17K with stop ④ 15K is used in 17" models (Part #WT49X389).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		HOTPOINT PART No.	NOTES
	OHMS	WATTS		
R7	22K			
R8	22Ω			
R9	5600Ω			
R10	330K			
R11	100Ω			
R12	56Ω			
R13	47K			
R14	470K			
R15	33K			
R16	470K			
R17	2200			
R18	47Ω			
R19	18K			
R20	820Ω			
R21	150Ω			
R22	5600Ω			
R23	3900Ω			
R24	68K			
R25	180K			
R26	1meg			
R27	5100Ω	7	WT14X119	Note 1
R28	75Ω 5%			
R29	12K			Note 2
R30	180K			
R31	2.2meg			
R32	47K			
R33	100K			Note 3
R34	1.5meg			
R35	10K	1		
R36	270Ω			Note 4
R37	68K			
R38	22Ω			
R39	120Ω			
R40	6.8meg			
R41	680K			
R42	180K			

ITEM No.	RATING		HOTPOINT PART No.	NOTES
	OHMS	WATTS		
R43	12meg 5%			
R44	470K 5%			
R45	510K 5%			
R46	1000Ω			
R47	350Ω	2		
R48	22K			
R49	1.8meg			
R50	150K			
R51	47K			
R52	68K			
R53	2.2meg			Note 5
R54	15K			
R55	1meg			
R56	820K			
R57	56K	1		
R58	15K			
R59	22000			Note 6
R60	2200Ω			Note 6
R61	560K			
R62	390K			
R63	1.5meg			
R64	68K			
R65	15K 5%	1		
R66	8200 5%			Note 7
R67	62K 5%			Note 8
R68	1meg			
R69	51K 5%			
R70	22K			
R71	12K			
R72	820K			
R73	470Ω			
R74	100Ω			
R75	10K	3	WT14X126	
R76	2200Ω			
R77	470K			

Note 1. 17" Models use 5600Ω 7W in this application (Part #WT14X118).
Note 2. 17" Models use 12K in this application.
Note 3. Late production omitted R33 and grounded pin 4 of V14.
Note 4. Not used in 17" Models.
Note 5. Some versions may use 1.8meg in this application.
Note 6. Some versions may use 10000 in this application.
Note 7. Some versions may use 43K 5% in this application.
Note 8. Some versions may use 33K in this application.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		HOTPOINT PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	47.25MC Trap	WT36X379					
L2	RF Choke	WT36X377					
L3	1st. Video IF	WT36X378					
L4	2nd. Video IF	WT6LX92					
L4A	3rd. Video IF	WT6LX93					
B	47.25MC Trap						
L6	4th. Video IF	WT36X382					
L7	RF Choke	WT36X381					1 Microhenry
L8	RF Choke						.22 Microhenry
L9	RF Choke						31 Microhenries
L10	RF Choke	WT36X66	19-1003	BC-563	4606-R		2.2 Microhenries ①
L11	RF Choke	WT36X344					7.5 Microhenries ①
L12	Series Peaking Coil	WT36X373					68 Microhenries ②
L13	Shunt Peaking Coil	WT36X345		TV-304			680 Microhenries
L14A	4.5MC Trap	WT36X383					
B	1st. Sound IF						
L15	Shunt Peaking Coil	WT36X381	19-3680	TV-306	6148		820 Microhenries ③
L16	Series Peaking Coil	WT36X374	19-3300	TV-109	6155		300 Microhenries
L17	Ratio Detector	WT36X46					
L18	RF Choke	WT36X105	19-1005	BC-566	4612		10 Microhenries ④

① IRC Part #CLA.
② Late production use 82 Microhenries (Part #WT36X387).
③ 17" Models use 820 Microhenries (Part #WT36X384).
④ IRC Part #CL-1.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA					NOTES
	PRI.	SEC.	HOTPOINT PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	
L19	7Ω		WT36X349						

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 ℃)	HOTPOINT PART No	Halldorson PART No	Merit PART No.	Ram * PART No	Stancor PART No	Thordarson PART No	Triad PART No.
L20	.270A	65Ω	1.2 Hy.	WT63X56	C5037 ①	C-2996 ①	F-803 ①	C-2328 ①	26C44 ①	C-17X ①

① Drill new mounting hole.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	HOTPOINT PART No	Halldorson PART No.	Merit PART No.	Ram PART No	Stancor PART No	Thordarson PART No.	Triad PART No
T1	117V	590VCT	5V	WT88X36						
	≙1.74A	≙.270A	≙2.4A							
	SEC. 3	SEC. 4	SEC. 5							
	6.3V									
	≙8.5A									

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							
		HOTPOINT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	Vert. Output	WT64X69	ZI807	A-3037	V315		V0-101		A-119X ①
T3A	Yoke-Horiz. (12MH)	WT76X27						Y-51 ②	
B	(210°)-Vert. (40MH)								
	Centering Device	WT42X16							
	Yoke Clamp	WT5X23							
T4	Horiz. Output	WT77X41							

① Drill new mounting hole(s).
② Connect C60 across yoke terminals #6 and #3, yoke terminal #3 to terminal #4 of T4, yoke terminal #5 to terminal #5 of T4, and yoke terminal #4 to junction of R58 & red lead of T2.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	HOTPOINT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T5	2400Ω	3-4Ω	WT64X70 ①	ZI103 ②	A-3025 ②	AU-603 ②	A-3332 ①	26S58 ②	S-1X ②	

① 17" Models use Part #WT64X71.
② Drill new mounting hole.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	HOTPOINT PART No.	QUAM PART No.	
SP1	4" x 6"	PM	3-4Ω	WT95X22 ①	46A07	① Used in Models 21S420, 421
	4"	PM	3-4Ω	WT95X8 ②		② Used in Models 17S320, 321, 322, 21S412
	6"	PM	3-4Ω	WT95X21 ③		③ Used in Models 21S532, 533, 630, 631
				WT95X7 ④		④ Used in Models 21S530, 531, 532, 533, 630, 631

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	HOTPOINT PART No.	REPLACEMENT DATA
K1	De-emphasis Network	1300mmf, 2000mmf, 5000mmf	WT33X20	
K2	Ratio Detector Network	800mmf, 22K	WT24X5	Centralab RC-476 Sprague PRC-4
K3	Sync Sep. Coupling	470mmf, 150K	WT24X7	
K4	Vert. Integrator	150mmf, 800mmf, 3300mmf, 22K, 68K, 68K, 100K	WT33X21 ①	

① Late production uses 100mmf, 800mmf, 3300mmf, 22K, 68K, 68K, 100K (Part #WT33X23).

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			HOTPOINT PART No.		LITTELFUSE PART No.		BUSS PART No	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	N	3½A 125V S/B	WT0X26	WT8X64	33303.5 (N 3½A-125V-S/B)	346018	N 3½	HN 2½ to 3½
M2	N	3/10A 250V S/B	WT0X25	WT8X63	313.300 (N 3/10A-125V-S/B)	346008	N 3/10	HN 0 to 3/10
M3	#26 Copper Wire 2" Length							

CRYSTAL DIODES

ITEM No.	CRKG. TYPE	REPLACEMENT DATA			NOTES
		HOTPOINT PART No.	CBS PART No.	SYLVANIA PART No.	
M4		WT16X4 ①	1N34	1N34A	Horiz. AFC (Pigtail)
M5		WT16X4 ①	1N34A	1N34A	Horiz. AFC (Pigtail)
M6	1N87A	WT16X1	1N84	1N295	Video Detector (Pigtail)

① Some versions may use a dual selenium diode (Part #WT16X7).

MISCELLANEOUS

ITEM No.	PART NAME	HOTPOINT PART No.	NOTES
M7	Tuner	WT86X67	VHF
	Tuner	WT86X69	VHF
	Tuner	WT86X71	VHF
	Tuner	WT86X68	VHF with UHF provisions
	Tuner	WT86X70	VHF with UHF provisions
	Tuner	WT85X23	UHF
	Magnet	WT42X21	Beam Alignment
	Printed Board	WT33X22	Video Detector
	Printed Board	20S793	Video IF, Sound
	Printed Board	21S396	Sweep

HOTPOINT MODELS 17S320, 17S321, 17S322, 21S412, 21S420, 21S421, 21S530, 21S531, 21S532, 21S533, 21S630, 21S631 & UHF (M4 Line)

FOLDER 3

PARTS LIST AND DESCRIPTIONS (Continued)

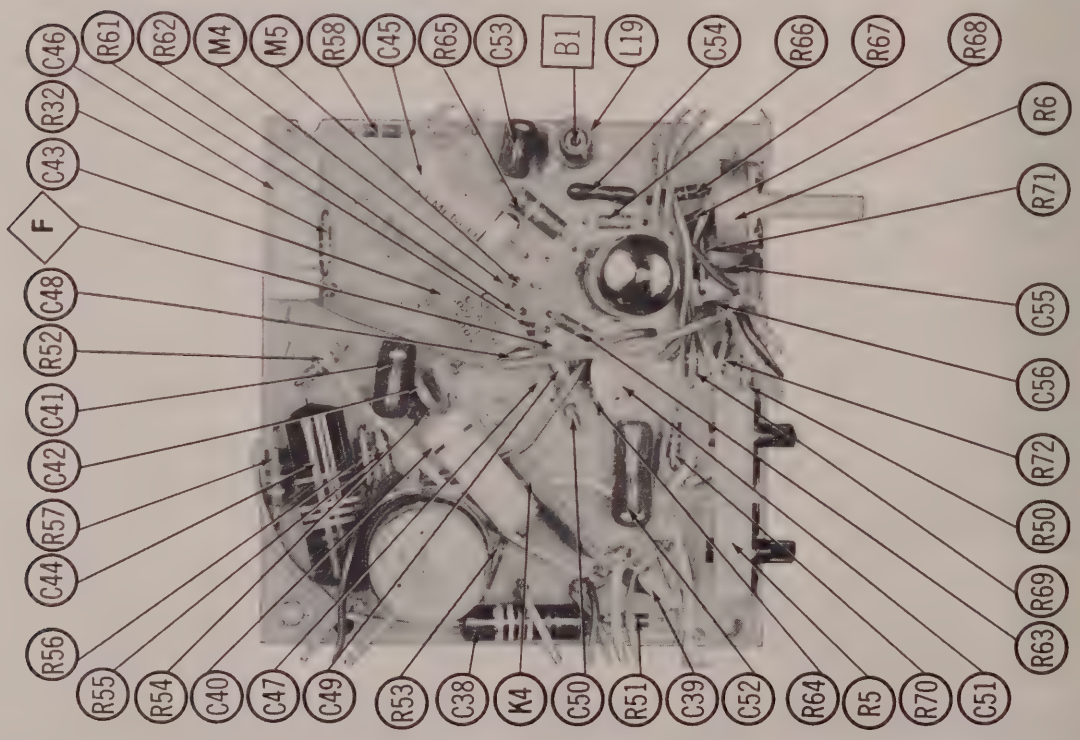
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	WT94X74	Models 21S420, 421, 532, 533, 630, 631
Safety Glass	WT94X77	Models 21S412, 530, 531
Safety Glass	WT94X76	Models 17S320, 321, 322
Mask	WT237X8	Models 21S412, 530, 531
Knob	WT218X39	Selector, Models 21S412, 420, 421, 530, 531
Knob	WT218X40	VHF Tuning, Models 21S412, 420, 421, 530, 531
Knob	WT218X45	Tuning, UHF Models 21S412, 420, 421, 530, 531
Knob	WT218X41	Contrast, Models 21S412, 420, 421, 530, 531
Knob	WT218X43	On-Off-Volume, Vert., Models 21S412, 420, 421, 530, 531
Knob	WT218X55	Selector, Models 21S532, 533, 630, 631
Knob	WT218X56	VHF Tuning, Models 21S532, 533, 630, 631
Knob	WT218X57	Tuning, UHF Models 21S532, 533, 630, 631
Knob	WT218X58	Contrast, Models 21S532, 533, 630, 631
Knob	WT218X59	On-Off-Volume, Vert., Models 21S532, 533, 630, 631
Escutcheon	WT233X14	Knob, Models 21S532, 533, 630, 631
Escutcheon	WT233X13	Knob, Models 21S420, 421
Escutcheon	WT233X15	Knob, Models 21S412, 530, 531
Knob	WT218X42	Brightness, 21" Models
Knob	WT218X44	UHF Dial, 21" Models
Knob	WT218X48	Brightness, 17" Models
Knob	WT218X46	Selector, 17" Models
Knob	WT218X51	VHF Tuning, Model 17S321
Knob	WT218X53	VHF Tuning, Models 17S320, 322
Knob	WT218X50	UHF Tuning, 17" Models
Knob	WT218X52	UHF Dial, Model 17S321
Knob	WT218X54	UHF Dial, Models 17S320, 322
Knob	WT218X47	Contrast, Models 17S321, 322
Knob	WT218X64	Contrast, Model 17S320
Knob	WT218X49	On-Off-Volume, Vert., Models 17S321, 322
Knob	WT218X65	On-Off-Volume, Vert., Model 17S320
Foot	WT226X15	Model 21S412
Leg	WT226X21	Model 21S532
Leg	WT226X22	Model 21S533
Leg	WT226X23	Model 21S630
Leg	WT226X24	Model 21S631

WIRING DATA

High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



SWEEP PRINTED BOARD

TUNER WT86X69, WT86X70
ALIGNMENT INSTRUCTIONS CON'T

UHF IF ALIGNMENT FOR TUNER #RJX-100

Connect the negative lead of a 3 volt bias supply to point (T).
Disconnect the IF link from the grid coil of the 1st. Video IF stage and terminate the open end of the cable or link with a 68Ω resistor.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.
Set the VHF tuner to the UHF position and adjust the UHF tuning for MINIMUM tilt of the response curve over the center of the tuning area (approximately 620MC).
Remove Germanium Diode from UHF Tuner.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Fig. 204	High side to point (V). Low side to chassis.	43.0MC (10MC Swp)	40.5MC 45.75MC	UHF	Vert. Amp. thru 10K to point (U). Low side to chassis.	A236, A237, A238, A239	Adjust A236 for maximum amplitude at 40.5 MC, A237 for maximum at 45.75MC and A238 for maximum gain and MINIMUM tilt (See Fig. 205).

UHF TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

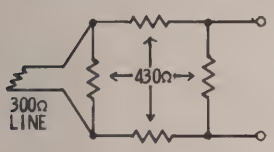
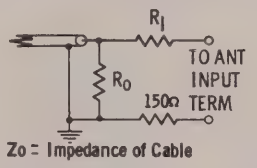


FIG. 201



Z_0	R_0	R_1
50Ω	56Ω	120Ω
72Ω	82Ω	110Ω
92Ω	110Ω	100Ω

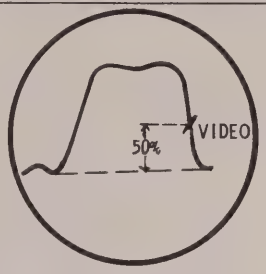


FIG. 202

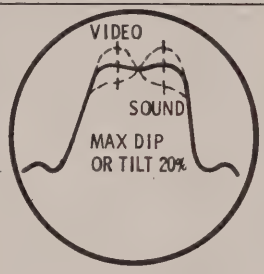


FIG. 203

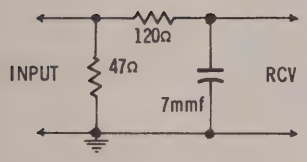


FIG. 204

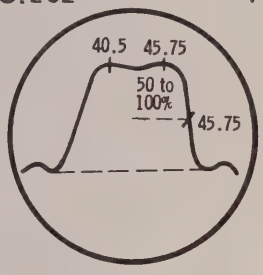
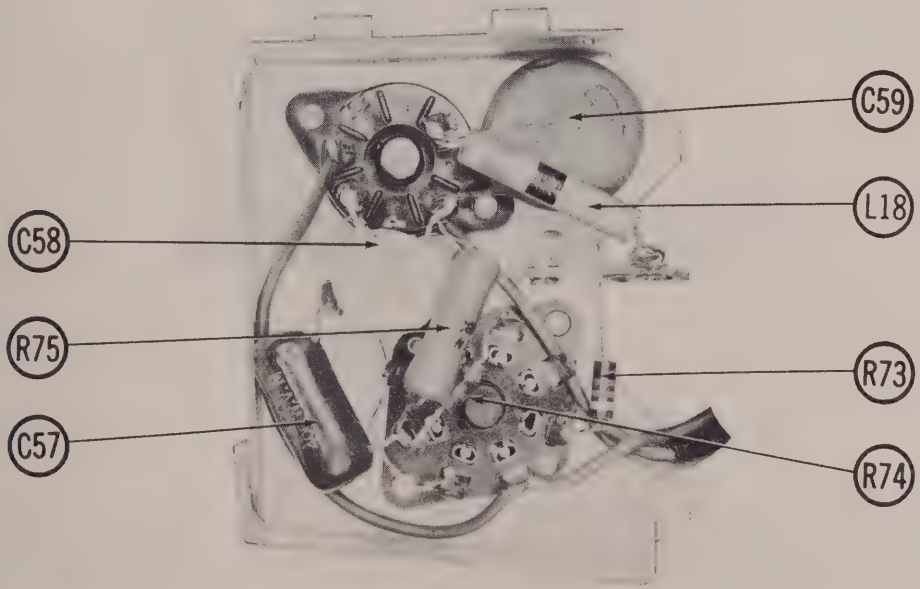
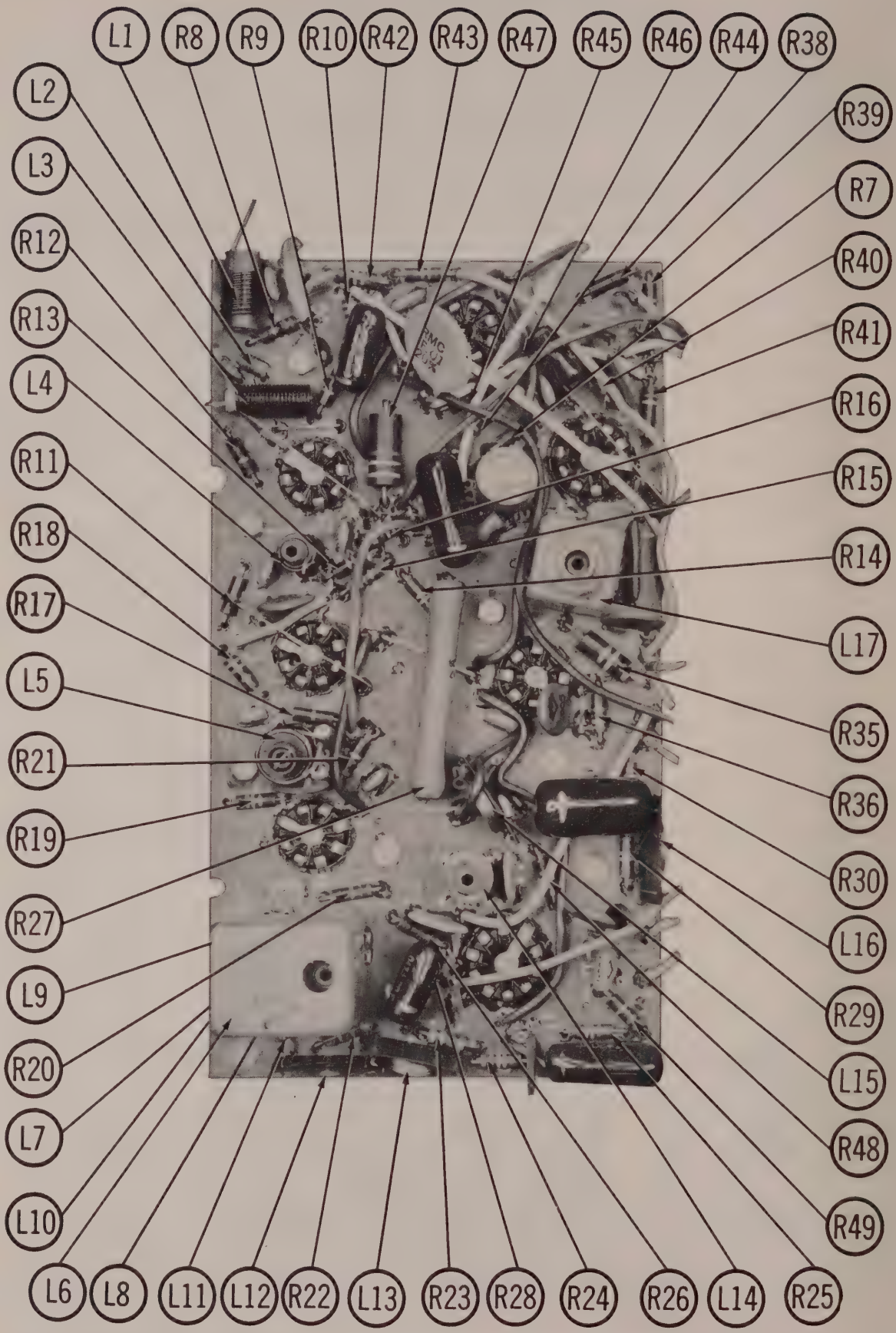


FIG. 205



HORIZ SUB CHASSIS



VIDEO IF PRINTED BOARD - RESISTOR INDUCTOR IDENT

VHF TUNER W/UHF PROVISIONS #WT86X70

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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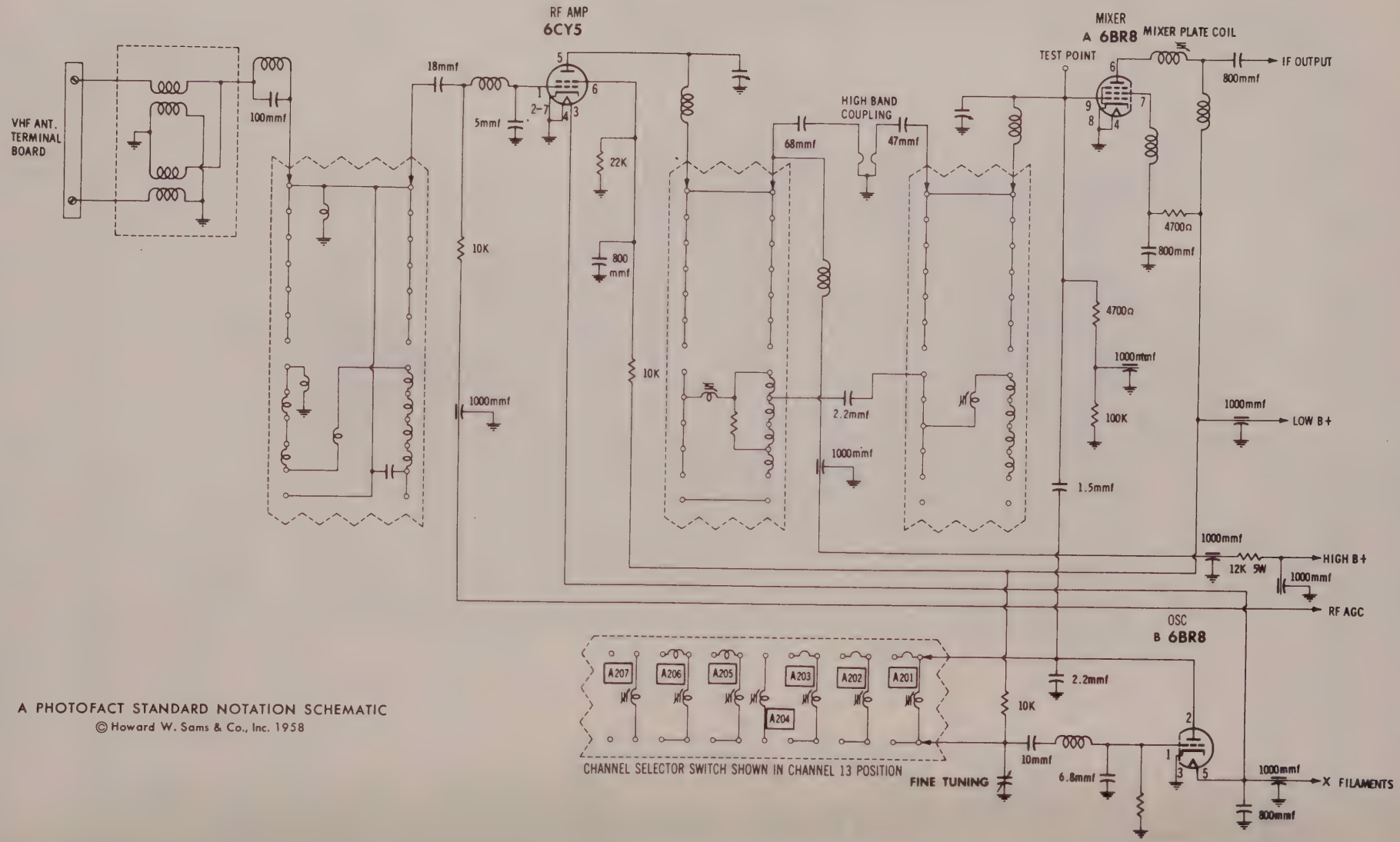

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER #WT86X71

ALIGNMENT INSTRUCTIONS (cont)

TUNER WT86X67–WT86X68

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point (T). Positive to chassis.
Disconnect IF link at IF end and terminate with a 68Ω resistor at the open end only.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Use 10MC sweep unless otherwise noted.
When making the following adjustments, it may be necessary to change bandwidth. This is accomplished by changing position of the "Gimmick" (A213) with respect to the adjacent capacitor.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Fig. 201	Across antenna terminals thru matching network (Fig. 201).	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K to point (U). Low side to chassis.	A214, A215, A216, A217	Adjust for maximum gain and symmetry of response similar to Fig. 203 with markers as shown. Adjust A214 for proper frequency of curve and A215 for proper tilt.
2.	"	"	207MC	205.25MC 209.75MC	12	"	A218, A219, A220	Adjust in numerical order. First coil for proper frequency, second for tilt and third coil for maximum gain and response similar to Fig. 203.
4.	"	"	201MC	199.25MC 203.75MC	11	"	A221, A222, A223	"
5.	"	"	195MC	193.25MC 197.57MC	10	"	A224, A225, A226	"
6.	"	"	189MC	187.25MC 191.75MC	9	"	A227, A228, A229	"
7.	"	"	183MC	181.25MC 185.75MC	8	"	A230, A231, A232	"
8.	"	"	177MC	175.25MC 179.75MC	7	"	A233, A234, A235	"
9.	"	"	85MC	83.25MC 87.75MC	6	"	A236, A237, A238	"
10.	"	"	79MC	77.25MC 81.75MC	5	"	A239, A240, A241	"
11.	"	"	69MC	67.25MC 71.75MC	4	"	A242, A243, A244	"
12.	"	"	63MC	61.25MC 65.75MC	3	"	A245, A246, A247	"
13.	"	"	57MC	55.25MC 59.75MC	2	"	A248, A249, A250	"

UHF IF ALIGNMENT FOR TUNER #WT86X68

Connect the negative lead of a 3 volt bias supply to point (T). Positive to chassis.
Disconnect the IF link at the IF end and terminate with a 68Ω resistor at the open end only.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Remove the Germanium Diode from the UHF Tuner.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Fig. 204	High side to point (V). Low side to chassis.	43.0MC (10MC Swp)	40.5MC 45.75MC	UHF	Vert. Amp. thru 10K to point (U). Low side to chassis.	A251, A252, A253	Adjust A251 for maximum gain at 40.5MC, A252 for maximum gain at 45.75MC and A253 for maximum overall gain and MINIMUM tilt.

HOTPOINT MODELS 17S320, 17S321, 17S322, 21S412, 21S420, 21S421, 21S530, 21S531, 21S532, 21S533, 21S630, 21S631 & UHF (M4 Line)

FOLDER 3

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	6CY5	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	6CL8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	HOTPOINT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	5		WT18X148	DI 5	DD-050	L10V5	ZT-555	5GA-V5	
C202	15		WT18X294						
C203	1000		WT23X4						
C204	.56		WT21X30						±.5mmf
C205	.91		WT21X11						±.5mmf
C206	1.3		WT21X31						±.5mmf
C207	47		WT18X253	BPD-000047	DD-470	L10Q47	UC-5447	5GA-Q47	
C208	1000		WT18X255						
C209	1000		WT18X255						
C210	1000		WT18X358	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C211	1000		WT18X358	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C212	.39		WT21X27						±.5mmf
C213	1.5		WT18X256						
C214	20			NPO-SI 20	TCZ-20	CTA6Q2C	ZT-542	5TCC-Q2	NPO 10%
C215	2		WT21X19	NPO-SI 2					±.5mmf
C216	1000		WT18X358	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C217									
C218	1000		WT18X255						
C219	1000		WT18X255						
C220	10		WT18X320		TCA-10				N330 5%
C221	1.5		WT18X319						N75
C222			WT30X43						
C223	1000		WT23X4						

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		HOTPOINT PART No.	NOTES
	OHMS	WATT		
R201	12K			
R202	12K	5	WT14X104	
R203	10K			
R204	22K			

ITEM No.	RATING		HOTPOINT PART No.	NOTES
	OHMS	WATT		
R205	15K			
R206	220K			
R207	15K			
R208	8200Ω			

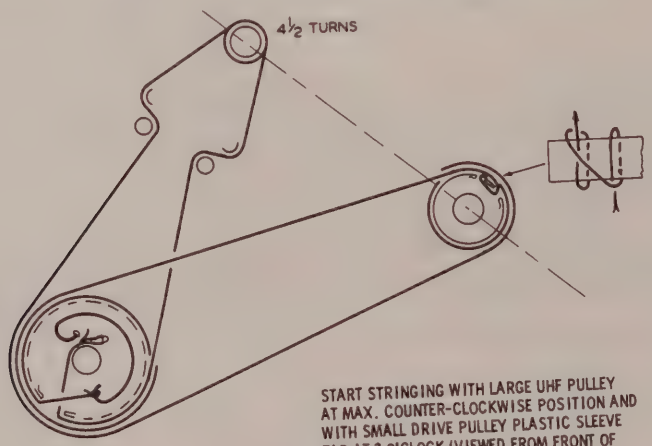
COILS (RF-IF)

ITEM No.	USE	HOTPOINT PART No.	NOTES
L201	Ant. Trans.	WT37X12	
L202	Ant. Coils	WT52X123	Channel 2-13, Includes wafer assy.
L203	RF Coils	WT52X124	Channel 2-13, Includes wafer assy.
L204	Mixer Grid Coils	WT52X125	Channel 2-13, Includes wafer assy.

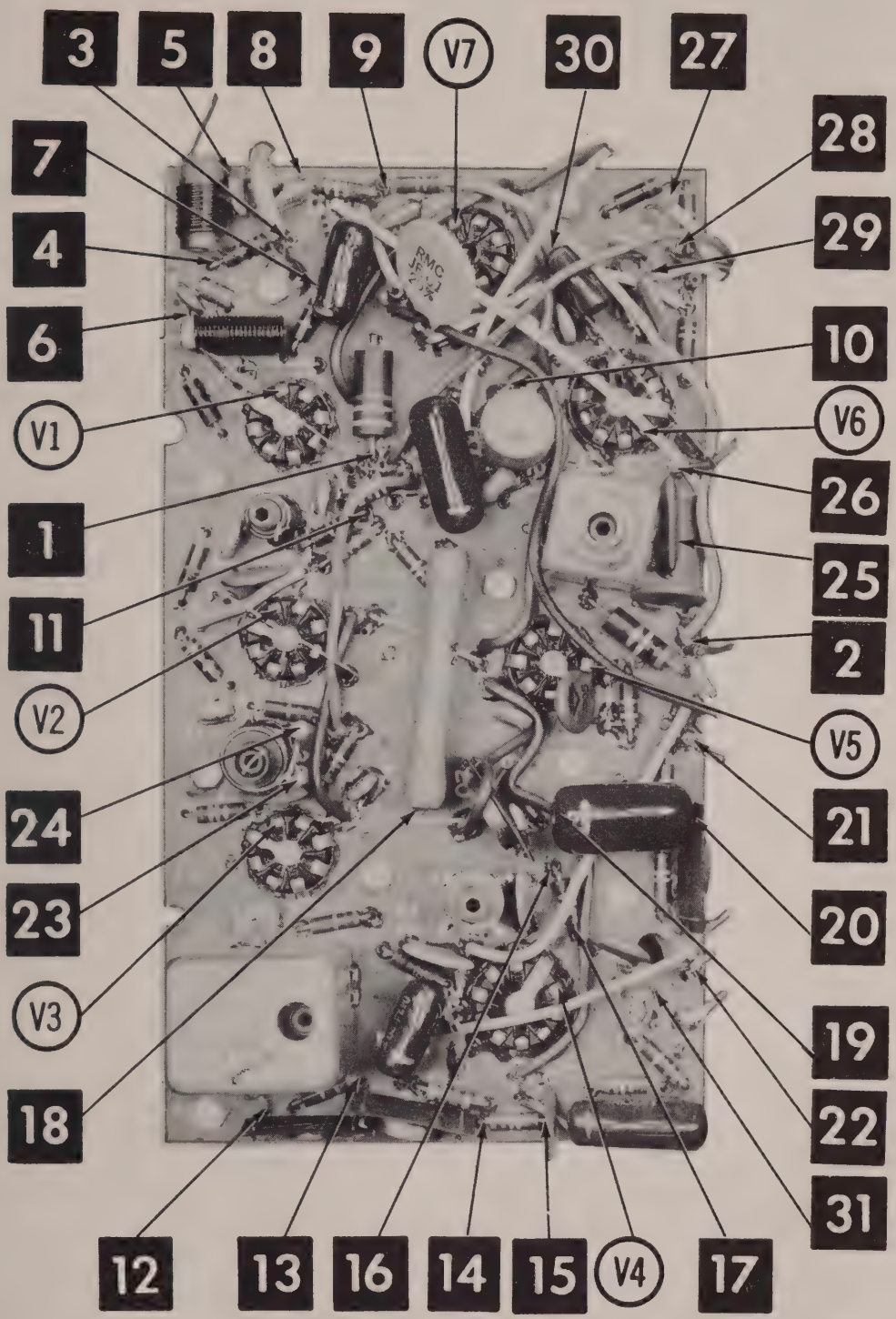
ITEM No.	USE	HOTPOINT PART No.	NOTES
L205	Osc. Coils	WT52X126	Channel 2-13, Includes wafer assy.
L206	Channel 6 Osc.	WT36X288 †	
L207	Channel 13 Osc.	WT36X319 †	
L208	Mixer Plate Coil	WT36X289	
L209	RF Choke	WT36X338	260 Microhenries, 5%, Note 1

† Part of L205.

Note 1. Later versions use 310 Microhenries, 5% (Part #WT36X399).


4½ TURNS
START STRINGING WITH LARGE UHF PULLEY AT MAX. COUNTER-CLOCKWISE POSITION AND WITH SMALL DRIVE PULLEY PLASTIC SLEEVE TAB AT 3 O'CLOCK (VIEWED FROM FRONT OF TUNER)

UHF DRIVE CORD STRINGING



A Howard W. Sams CIRCUITRACE* Photo
*TRADE MARK

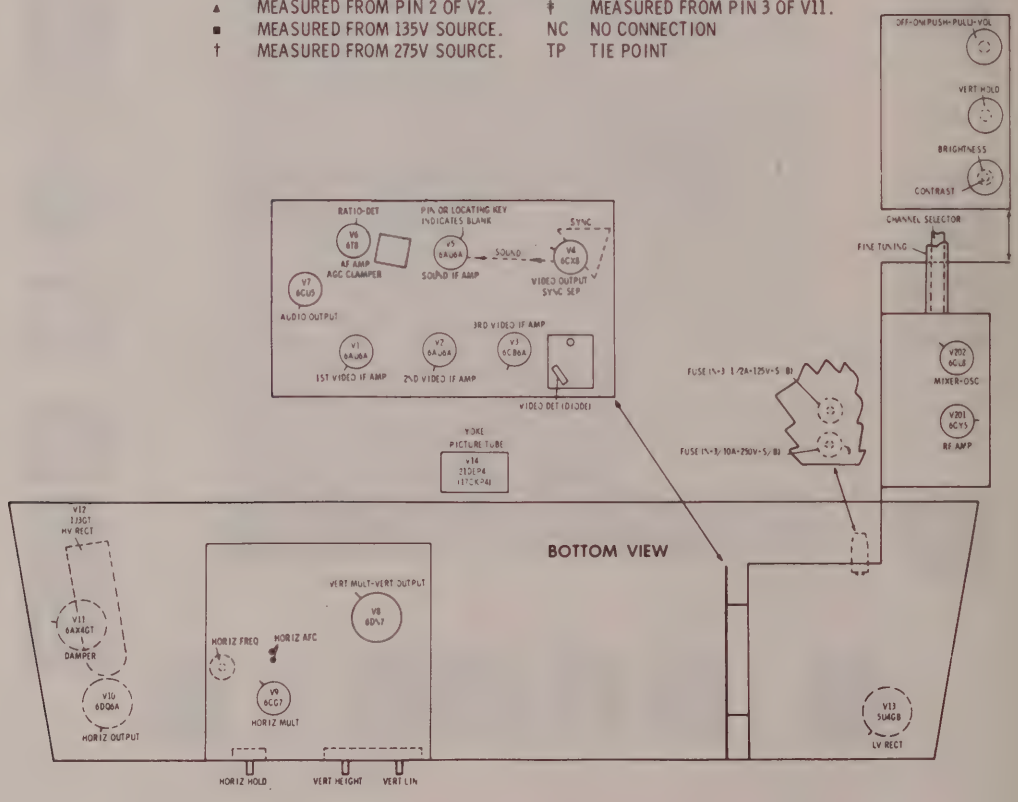
VIDEO IF
PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

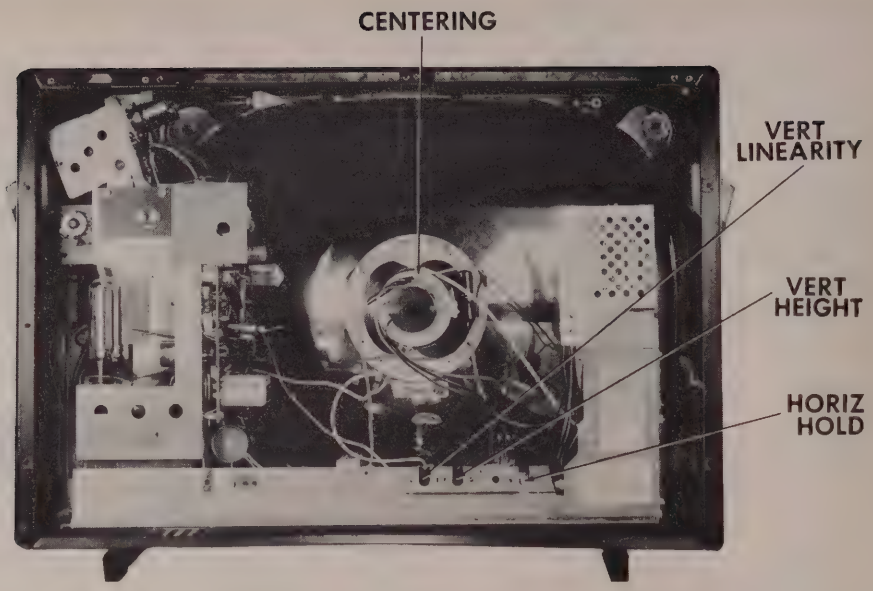
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AU6A	520K	0Ω	.1Ω	0Ω	▲100Ω	▲100Ω	56Ω		
V2	6AU6A	230K	260K	.1Ω	0Ω	† 220Ω	† 220Ω	▲ 47Ω		
V3	6CB6A	.1Ω	150Ω	.1Ω	0Ω	■ 220Ω	■220Ω	0Ω		
V4	6CX8	0Ω	2meg	■ 20K	.1Ω	0Ω	75Ω	1meg	■0Ω	† 4500Ω
V5	6AU6A	2.5Ω	0Ω	.1Ω	0Ω	■ 10K	■10K	270Ω		
V6	6T8	INF	22K	INF	0Ω	.1Ω	430K	0Ω	6.8meg	† 680K
V7	6CU5	¶	240K	.1Ω	0Ω	240K	† 330Ω	† 600Ω		
V8	6DN7	● 2.2meg	‡2500Ω	0Ω	● 900K	●‡3.5meg	0Ω	.1Ω	0Ω	
V9	6CG7	† 15K	2meg	820Ω	.1Ω	0Ω	† 73K	62K	820Ω	0Ω
V10	6DQ6A	TP	.1Ω	NC	† 10K	820K	TP	0Ω	0Ω	TOP CAP ‡26.5Ω
V11	6AX4GT	NC	NC	¶ 200K	NC	† 0Ω	NC	.1Ω	0Ω	
V12	1J3GT		PINS	1 THRU 8	HAVE	INFINITE	RESISTANCE			TOP CAP ‡356Ω
V13	5U4GB	NC	¶	NC	34Ω	NC	31Ω	NC	¶	
V14	21DEP4	0Ω	47K	‡850K	100K	NC	NC	● 220K	.1Ω	
V201	6CY5	420K	0Ω	0Ω	.1Ω	† 12K	■ 8500Ω	0Ω		
V202	6CL8	15K	■ 10K	0Ω	0Ω	.1Ω	■ .2Ω	■ .1Ω	0Ω	235K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
▲ MEASURED FROM PIN 2 OF V2.
■ MEASURED FROM 135V SOURCE.
† MEASURED FROM 275V SOURCE.
‡ MEASURED FROM PIN 3 OF V11.
NC NO CONNECTION
TP TIE POINT



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV signal, preferably a test pattern.

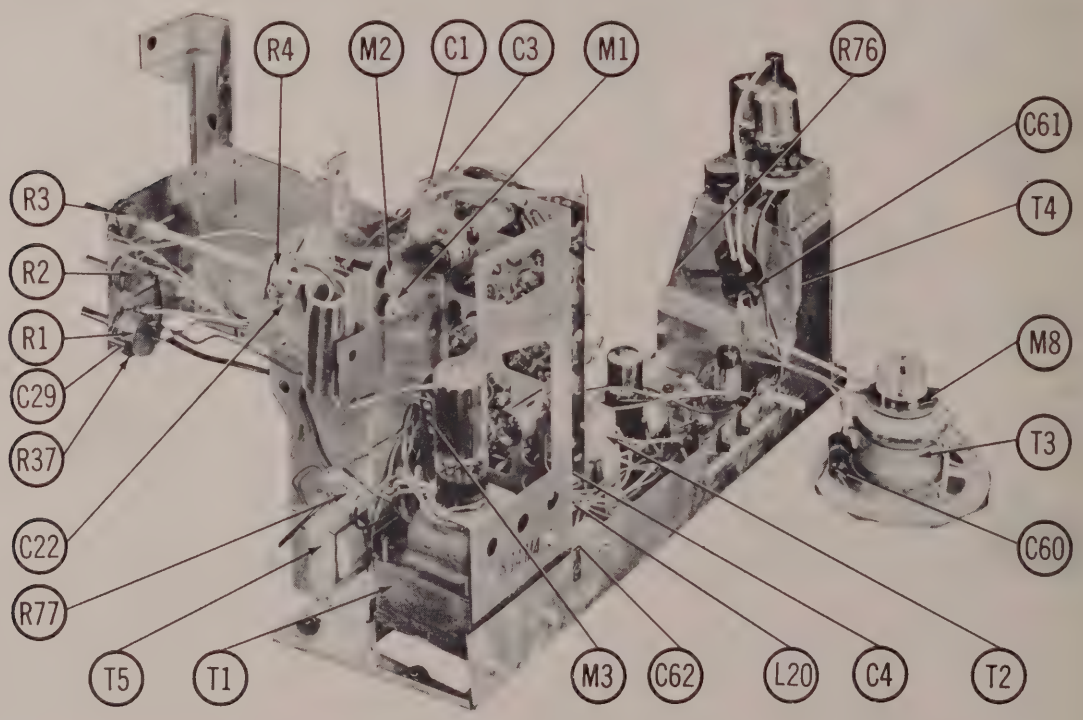
Connect a clip lead from point Ⓕ to chassis.

Connect a 1000Ω resistor across the Horizontal Frequency Coil (L19).

Adjust the Horizontal Hold to a point where the picture appears to float back and forth across the screen.

Remove the resistor from across L19 and adjust the Horizontal Frequency slug (B1) until the picture again floats back and forth.

Remove the clip lead from point Ⓕ and chassis. Readjust Horizontal Hold, if necessary.



CHASSIS—REAR VIEW

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

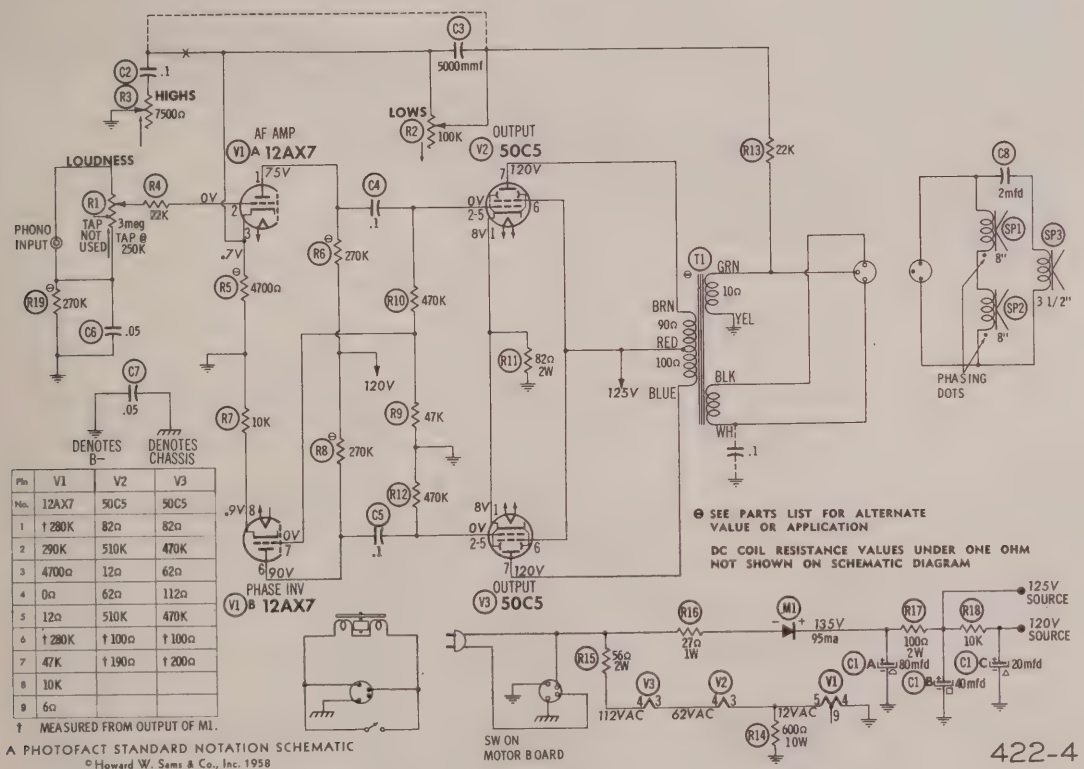
AIRLINE MODELS GAA-2600A, B, GAA-2601A, B, GAA-2604A, GAA-2605A

AIRLINE MODELS GAA-2600A, B, GAA-2601A, B, GAA-2604A, GAA-2605A

MODEL GAA-2605A

TRADE NAME	Airline Models GAA-2600A, GAA-2600B, GAA-2601A, GAA-2601B, GAA-2604A, GAA-2605A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Illinois
TYPE SET	AC Operated Phono Amplifier With 4 Speed Automatic Record Changer
TUBES (Three)	Types 12AX7 AF Amp. - Phase Inv., (2) 50C5 Output
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .37 Amp. @ 117 Volts AC (33 Watts Less Motor)

FOR SERVICE INFORMATION ON V-M 1210 RECORD CHANGER - SEE V-M MODEL 1200A - PHOTOFACT SET 353 FOLDER 16 OR RECORD CHANGER MANUAL RC-10.
FOR SERVICE INFORMATION ON V-M 954 RECORD CHANGER USED IN MODELS GAA-2600A OR GAA-2601A - SEE V-M 954B-PHOTOFACT SET 302 FOLDER 12 OR RECORD CHANGER MANUAL CM-8.



Pin	V1	V2	V3
No.	12AX7	50C5	50C5
1	† 280K	82Ω	82Ω
2	290K	510K	470K
3	4700Ω	12Ω	62Ω
4	0Ω	62Ω	112Ω
5	12Ω	510K	470K
6	† 280K	† 100Ω	† 100Ω
7	47K	† 190Ω	† 200Ω
8	10K		
9	6Ω		

† MEASURED FROM OUTPUT OF M1.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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H624

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier - Phase Inverter	12AX7	

ITEM No.	USE	TYPE	NOTES
V2	Output	50C5	
V3	Output	50C5	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▬80	150	1018	AFH4-01	D0010	FP311.7	TMQ-1	Q-005	R2485 *
B	■40	150							
C	▲20	150							

* Non-Catalog Item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C3	5000		906	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C4	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C5	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C6	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C7	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C8	2.0	50	830						

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3meg	½	401E	B-85	A47-3meg-Z	Q13-140	U57	Loudness, Tap ② 250K ①
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	100K	½	416	B-40	A47-100K-S	Q11-128	U41	Lows
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	7500Ω	½	408G	B-15	A47-10K-Z	Q13-116	U18	Highs ②
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

① Tap not used. ② Control with Switch (Part #415) may be used in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	AIRLINE PART No.	NOTES
R4	22K			
R5	4700Ω			Note 1.
R6	270K			Note 2.
R7	10K			
R8	270K			Note 2.
R9	47K			
R10	470K			
R11	82Ω	2		

ITEM No.	RATING OHMS	RATING WATT	AIRLINE PART No.	NOTES
R12	470K			
R13	22K			
R14	600Ω	10(WW)	626A	
R15	56Ω	2(WW)		
R16	27Ω	1(WW)	542	
R17	100Ω	2		
R18	10K			
R19	270K			Note 2

Note 1. Some versions may use 4500Ω in this application.

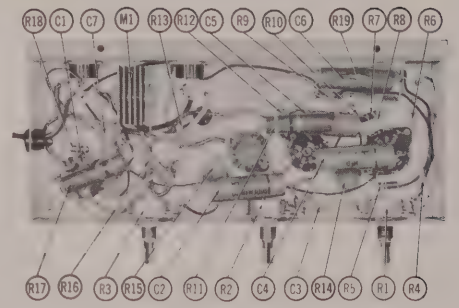
Note 2. Some versions may use 250K in this application.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.1	REPLACEMENT DATA AIRLINE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2700Ω CT	12Ω SEC.2 6.8Ω	1210							Note 1.

Note 1. Some versions of Models GAA-2600A and GAA-2601A use Part #1210A (one secondary winding).

CHASSIS—BOTTOM VIEW



SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA AIRLINE PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	8"	PM	3-4Ω	2620	8A21PAZ3.6	
SP2	8"	PM	3-4Ω	2620A	8A21PAZ3.3	
SP3	3½"	PM	6-8Ω	2621	3A15TZ8	

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA AIRLINE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.094A		1235AH	RS150	150 M150 ①	① Silicon Type

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA AIRLINE PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	REMARKS
M2	60-48	81-TB				Models GAA-2600B, GAA-2601B, GAA-2605A, GAA-2604A
	60-47	422-TS	N8-1 & N8-3			Models GAA-2600A, GAA-2601A

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA AIRLINE PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M3	61-48 (78RPM)	† CRA-55 or ♦ CRA-55D	† W-64S or ♦ W-64D	Models GAA-2600A, GAA-2601A † Jewel ♦ Diamond
	61-47 (LP)	† CRA-55LP or ♦ CRA-55LPD	† W-64MGS or ♦ W-64MGD	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401

Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

BLAUPUNKT MODELS Americano, Arkansas, Barcelona, Elvira, Gina, Hawaiian, Jewel, Kongo, Romeo

MODEL Barcelona

BLAUPUNKT MODELS Americano, Arkansas, Barcelona, Elvira, Gina, Hawaiian, Jewel, Kongo, Romeo

TRADE NAME	Blaupunkt Models Americano, Arkansas, Barcelona, Elvira, Gina, Hawaiian, Jewel, Kongo, Romeo		
IMPORTER	N. Pickens Import Co., 64-01 Woodside Ave., Woodside, N. Y.		
TYPE SET	AC Operated FM-BC-SW-LW Receiver		
TUBES (Seven)	Types ECC85/6AQ8 FM RF Amp.-FM Conv., EC92/6AB4 1st FM IF Amp., ECH81/6AJ8 2nd FM IF Amp.-AM Mixer-AM Osc., EF89 3rd FM-1st AM IF Amp., EABC80/6T8 Ratio Det.-AM Det.-AVC-AF Amp., EM80/6BR5 Tuning Indicator, EL84/6BQ5 Output		
POWER SUPPLY	110/127/155/220/240 Volts AC-60 Cycles	RATING	.63 Amp. @ 117 Volts AC (65 Watts)
TUNING RANGES	BROADCAST 515-1620KC LONG WAVE 145-375KC	FREQ. MOD. SHORT WAVE	87.4-108MC 5.95-18.2MC

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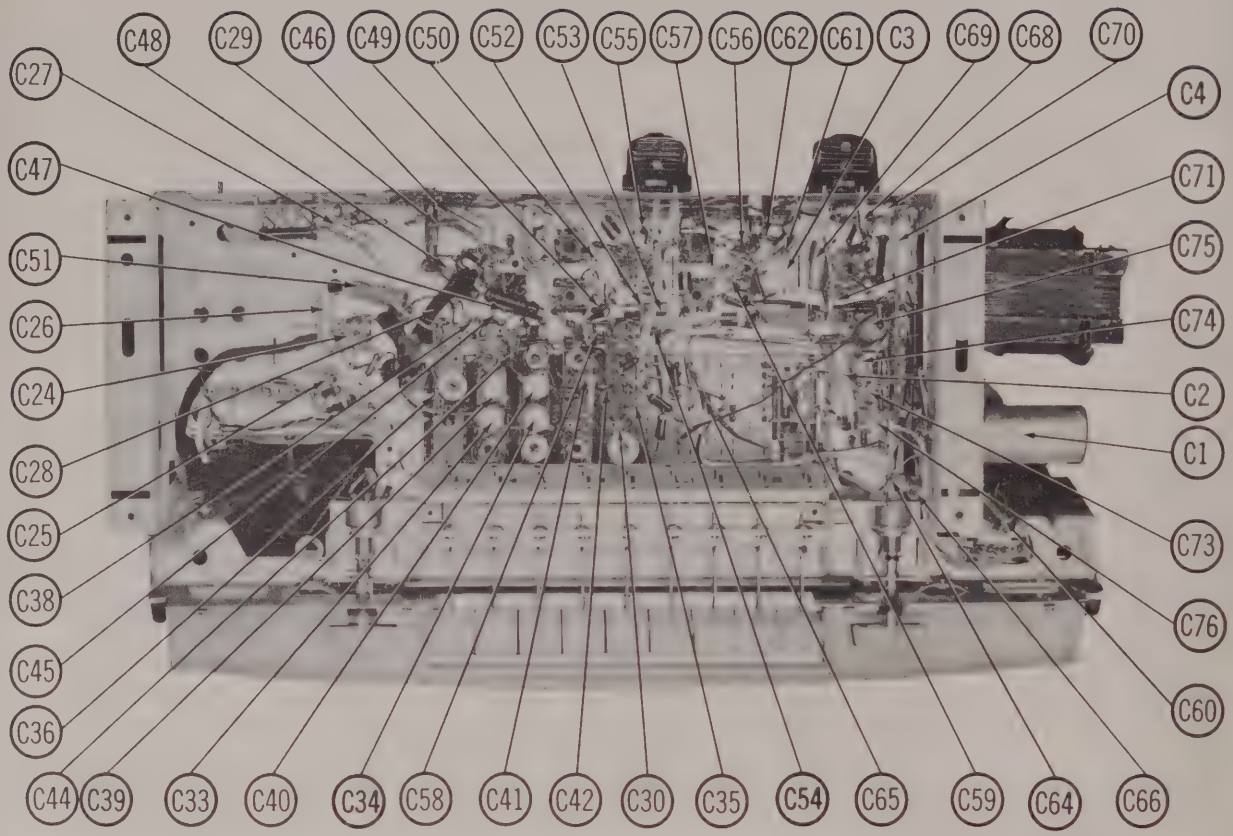
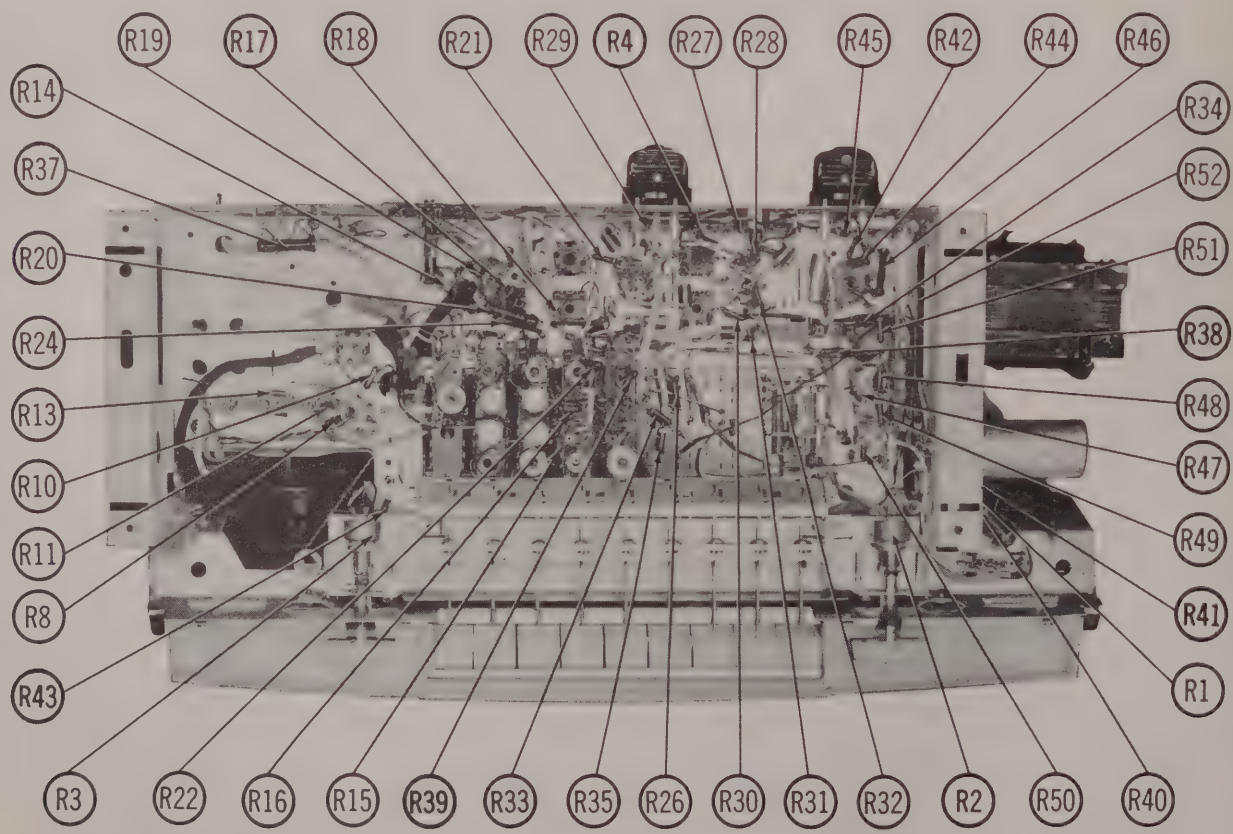
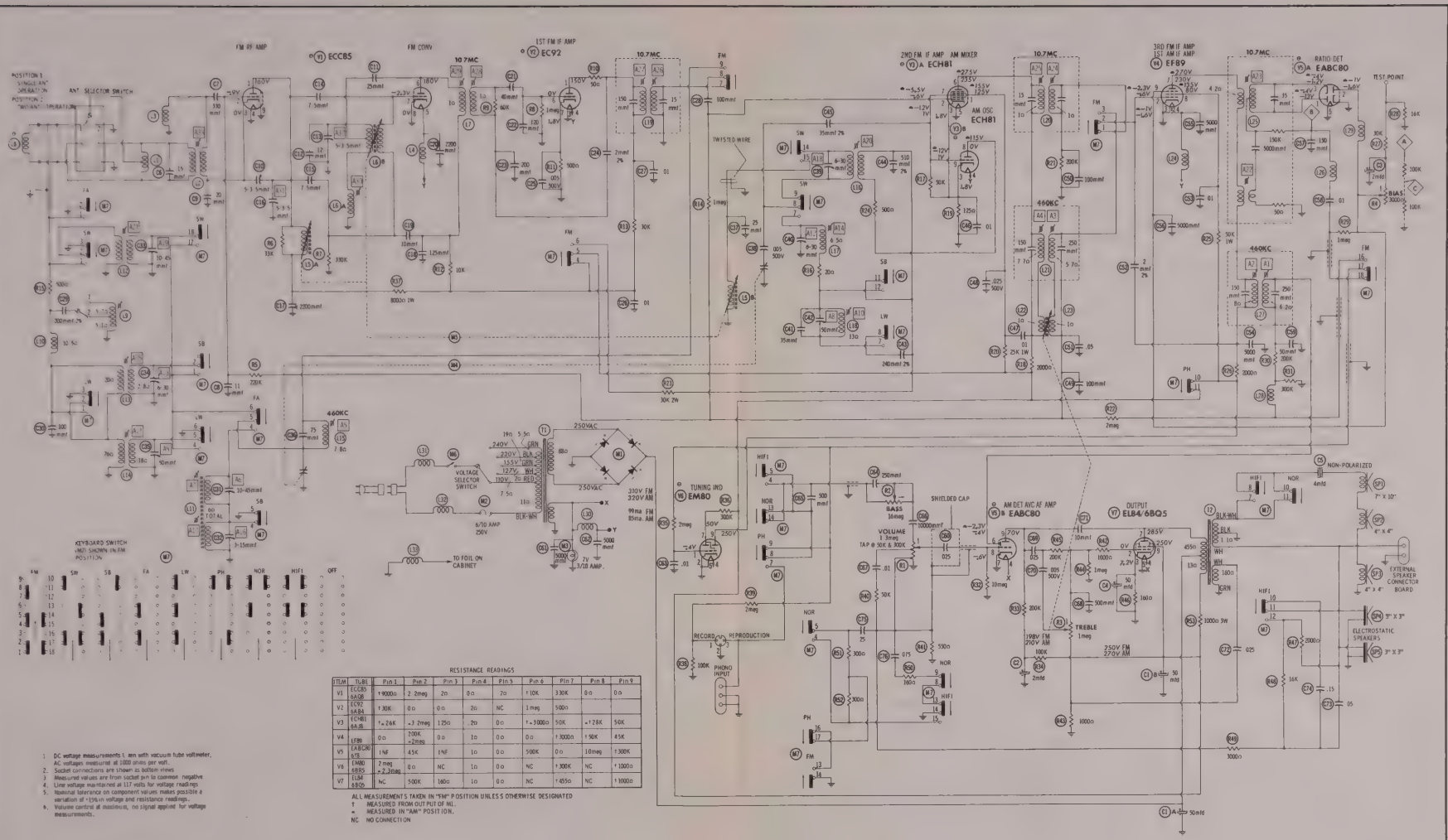


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85 6AQ8	↑9000Ω	2.2meg	2Ω	0Ω	2Ω	↑10K	330K	0Ω	0Ω
V2	ECH81 6AB8	↑30K	0Ω	0Ω	2Ω	NC	1meg	500Ω		
V3	ECH81 6AJ8	↑=26K	+3.2meg	125Ω	2Ω	0Ω	↑=3000Ω	50K	=↑28K	50K
V4	EF89	0Ω	200K =2meg	0Ω	1Ω	0Ω	0Ω	↑3000Ω	↑50K	45K
V5	EABC80 6T8	1MF	45K	1MF	1Ω	0Ω	500K	0Ω	10meg	↑300K
V6	EM80 6BG5	2 meg =2.3meg	0Ω	NC	1Ω	0Ω	NC	↑300K	NC	↑1000Ω
V7	EL84 6BQ5	NC	500K	160Ω	1Ω	0Ω	NC	↑650Ω	NC	↑1000Ω

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED
↑ MEASURED FROM OUTPUT OF NL
= MEASURED IN "AM" POSITION.
NC NO CONNECTION

1. DC voltage measurements t. ken with vacuum tube voltmeter. AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 2 (grid) of ECH81 (V3). Low side to chassis.	460KC (400∿ Mod.)	SB	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum deflection.
2.	"	High side to AM antenna receptacle. Low side to chassis.	460KC	"	546KC	"	A5	Adjust for MINIMUM deflection.
3.		Loop	350KC	LW & F-Ant.	350KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	160KC	"	160KC	"	A7	"
5.	.01mfd	High side to AM antenna receptacle. Low side to chassis.	350KC	LW	350KC	"	A8, A9	Adjust for maximum output.
6.	"	"	160KC	"	160KC	"	A10, A11	"
7.	"	"	1500KC	SB	1500KC	"	A12, A13	"
8.	"	"	546KC	"	546KC	"	A14, A15	"
9.		Loop	1500KC	SB & F-Ant.	1500KC	"	A16	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
10.		"	546KC	"	546KC	"	A17	"
11.	200mmf	High side to AM antenna receptacle. Low side to chassis.	18MC	SW	18MC	"	A18, A19	Adjust for maximum deflection.
12.	"	"	6.25MC	"	6.25MC	"	A20, A21	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100K (±1%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
13.	200mmf	High side to pin 2 (grid) of EF89 (V4). Low side to chassis.	10.7MC (Unmod.)	FM	Point of non-interference	DC probe to point Ⓐ. Common to chassis.	A22	Adjust for maximum deflection.
14.	"	"	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A23	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
15.	"	High side to pin 7 (grid) of ECC85 (V1). Low side to chassis.	"	"	"	DC probe to point Ⓐ. Common to chassis.	A24, A25, A26, A27, A28, A29	Adjust for maximum deflection.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
13.	200mmf	High side to pin 2 (grid) of EF89 (V4). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point Ⓐ. Low side to chassis.	A22	Disconnect stabilizing capacitor C 3. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
14.	"	"	"	"	"	Vert. Amp. to point Ⓑ. Low side to chassis.	A23	Reconnect C3. Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A22 for maximum amplitude and straightness of crossover lines.
15.	"	High side to pin 7 (grid) of ECC85 (V1). Low side to chassis.	"	"	"	Vert. Amp. to point Ⓐ. Low side to chassis.	A24, A25, A26, A27, A28, A29	Disconnect C3. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1. Reconnect C3.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
16.	270Ω Carbon Resistor	Across FM antenna terminals with 270Ω in high side.	100MC (Unmod)	FM	100MC	DC probe to point Ⓐ. Common to chassis.	A30, A31	Adjust for maximum deflection.
17.	"	"	91MC	"	91MC	"	A32, A33	"

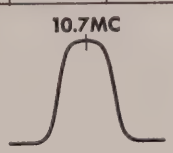


FIG. 1

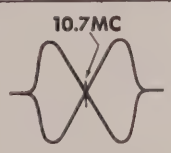
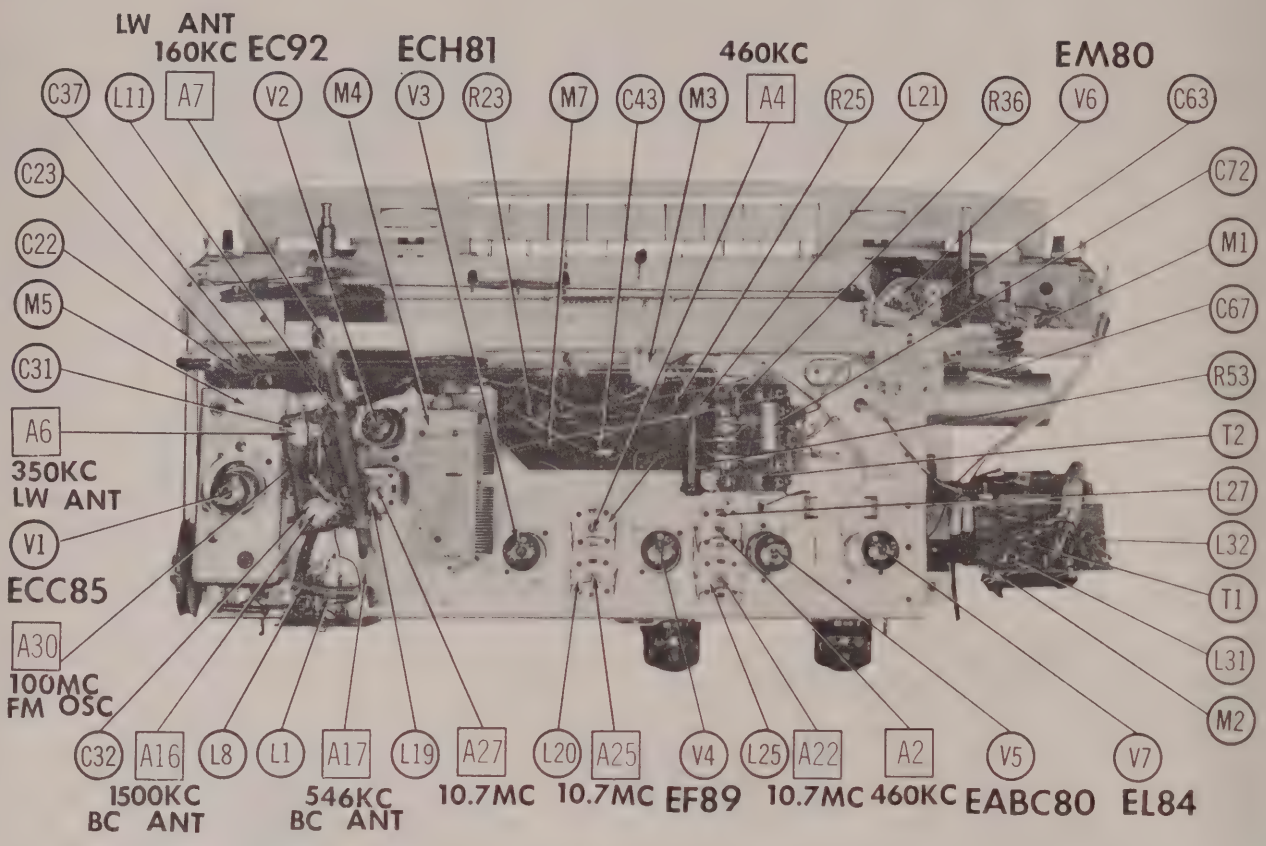
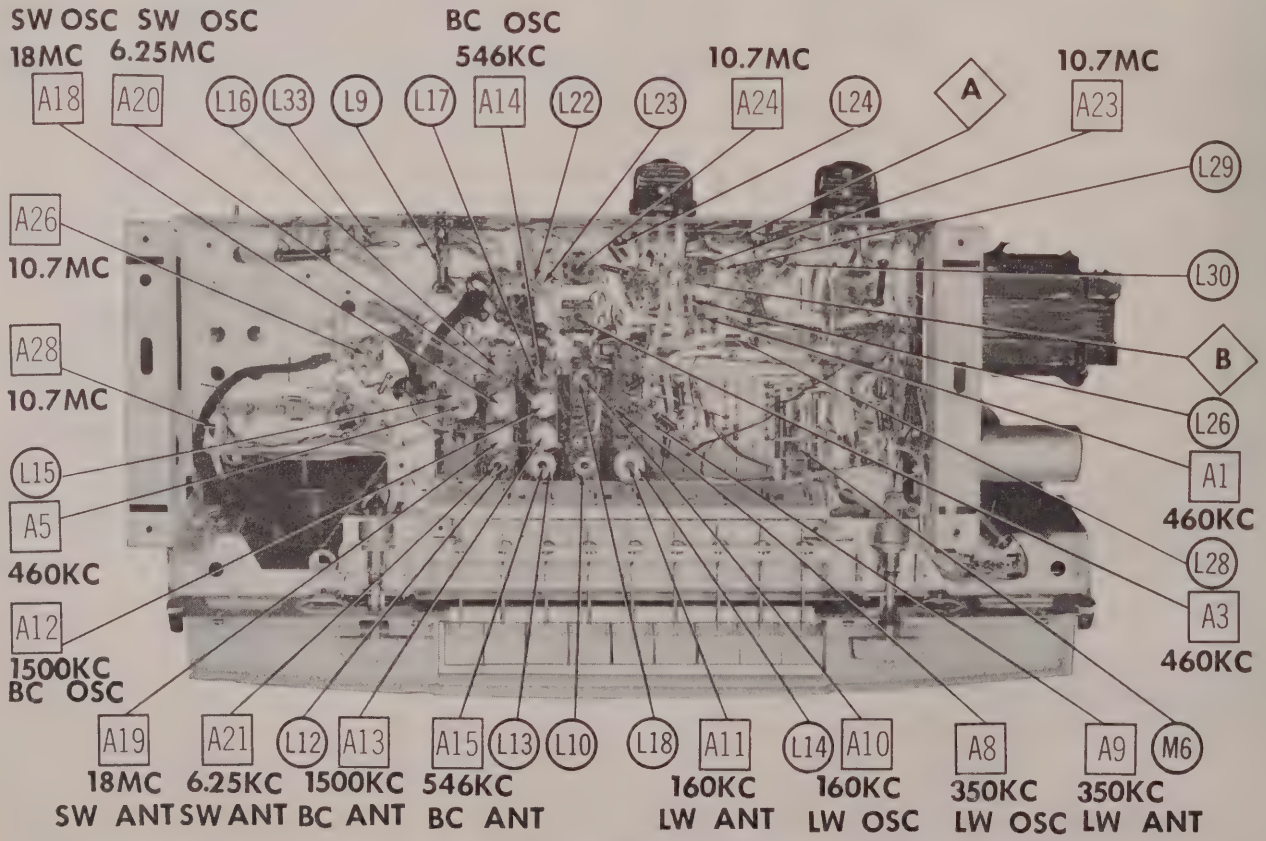


FIG. 2

BLAUPUNKT MODELS Americano, Arkansas, Barcelona, Elvira, Gina, Hawaiian, Jewel, Kongo, Romeo



CHASSIS - TOP VIEW



CHASSIS BOTTOM VIEW - ALIGN, INDUCTOR, & MISC IDENT

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	FM RF Amp. - FM Conv.	ECC85/6AQ8 ①
V2	1st FM IF Amplifier	EC92/6AB4 ①
V3	2nd FM IF Amp. - AM Mixer - AM Osc.	ECH81/6AJ8 ①
V4	3rd FM - 1st AM IF Amp.	EF89
V5	Ratio Det. - AM Det. - AVC - AF Amp.	EABC80/6T8 ①
V6	Tuning Indicator	EM80/6BR5 ①
V7	Output	EL84/6BQ5 ①

① Domestic type listed may not be directly interchangeable in some instances.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	BLAUPUNKT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	50	385						S-275	R2582 *
B	50	385						MT-4550	
C2	2	385		PRS450V2	BR245		TD-2-450	MT-4502	TVA-1701
C3	2	35		PRS50V2	BBR2-50	TC302	TD-2-50	MT-0502	TVA-1301
C4	50	15		PRS25V50	BBR50-25	TC29	TD-50-25	MT-0250	TVA-1206
C5	4	15NP		NP-PRS50V4	BBR8-150 †	TC41 †	TD-8-150 †	MT-1508 †	R2444 *
					BBR8-150 †	TC41 †	TD-8-150 †	MT-1508 †	

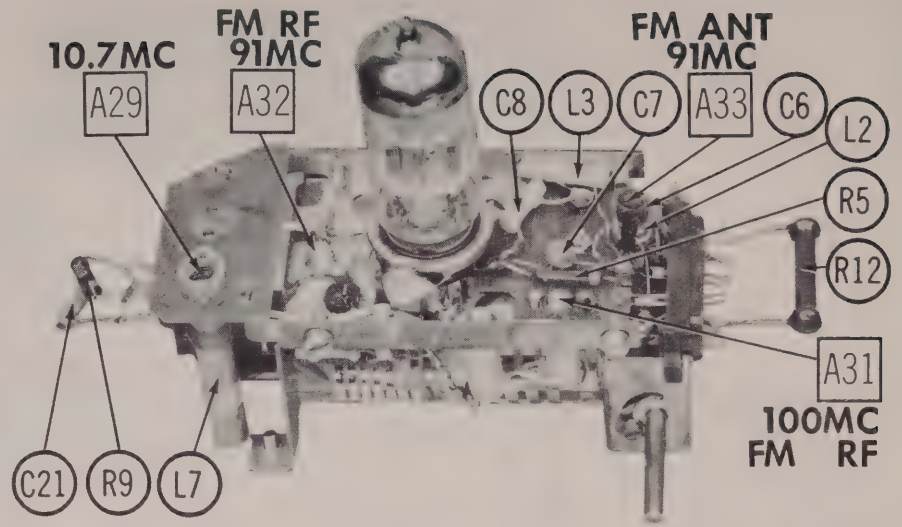
† Connect Negative Leads together. * Non-Catalog Item.

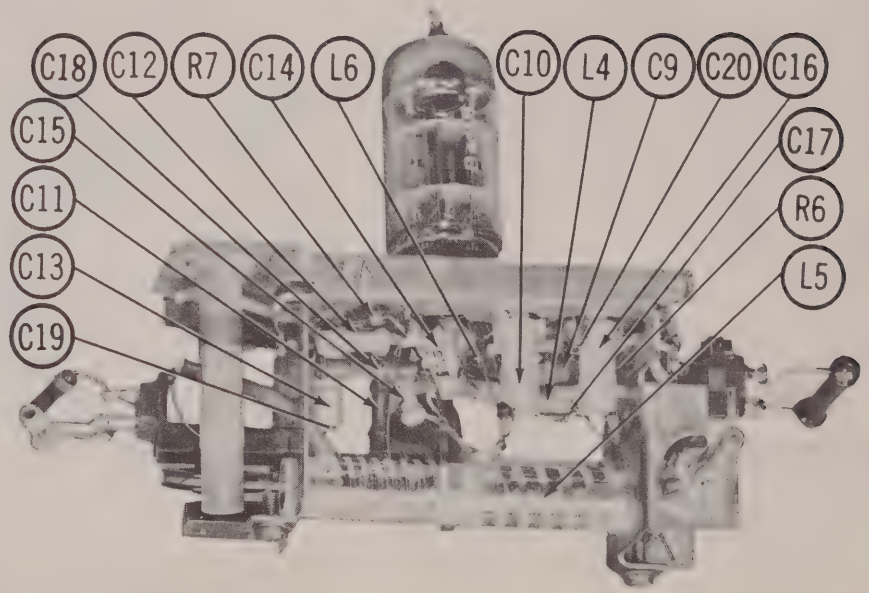
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	BLAUPUNKT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	15			BPD-000015	DD-150	L10Q15	UC-5415	5GA-Q15	
C7	330			BPD-00033	D6-331	L10T33	UC-5333	5GA-T33	
C8	11								
C9	20			SI 20	D6-200	LT6Q2	UC-542	5GA-Q2	
C10	.5-3.5								
C11	25			SI 25	D6-250	LT6Q25	UC-5425	5GA-Q25	
C12	12			SI 12	D6-120	LT6Q12	UC-5412	5GA-Q12	
C13	.5-3.5								
C14	7.5								
C15	7.5								
C16	.5-3.5								
C17	2200			BPD-0022	DD-222	BYA10D22	UC-5222	5GA-D22	
C18	125								
C19	10			SI 10	D6-100	LT6Q1	UC-541	5GA-Q1	
C20	2200			BPD-0022	DD-222	BYA10D22	UC-5222	5GA-D22	
C21	40								
C22	120			1468-00012	D6-121	5W5T12	UC-5312	1FM-T12	
C23	200			1468-0002	D6-201	5W5T2	UC-532	1FM-T2	
C24	2								2%
C25	.005	500		P688N-005	D6-502	CUB6D5	UC-525	6TM-D5	
C26	.01	350		P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C27	.01	350		P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C28	100			SI 100	D6-101	LT6T1	UC-531	5GA-T1	
C29	200								2%
C30	100			1468-0001	D6-101	5W5T1	MC235	1FM-31	
C31	10-45								
C32	3-15								
C33	10-45								
C34	6-30								
C35	50								
C36	75								
C37	25								
C38	.005	500		P688N-005	D6-502	CUB6D5	GEM-625	6TM-D5	
C39	6-30								
C40	6-30								
C41	35								
C42	50								
C43	240								2%

FM RF SUB CHASSIS





PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		BLAUPUNKT PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L15	IF Trap Coil						
L16	SW Osc. Coil						
L17	BC Osc. Coil						
L18	LW Osc. Coil						
L19	2nd FM IF	ZF720/18Z	16-3487 *	FM-254 *	1463 *		
L20	3rd FM IF	ZF720/22Z	16-3487 *	FM-254 *	1463 *		
L21	1st AM IF	ZF720/21Z					
L22	Bandwidth Coil						
L23	Bandwidth Coil						
L24	Fil. Choke						2 Microhenries
L25	Ratio Det.	ZF720/17Z					
L26	RF Choke					VP-9	1.85 Microhenries
L27	2nd AM IF	ZF720/14Z					
L28	RF Choke					VP-9	1.85 Microhenries
L29	RF Choke					VP-9	1.85 Microhenries
L30	Fil. Choke					VP-9	1.85 Microhenries
L31	Line Choke		19-1002	BC-563	4606		2.1 Microhenries
L32	Line Choke		19-1002	BC-563	4606		2.1 Microhenries
L33	RF Choke						2 Microhenries

* Enlarge chassis cut out and use original clip for mounting.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	BLAUPUNKT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	240V Tape ② 220V,155V, 130V,117V .3A ② 220V .63A ② 117V	250V ② .100A	6.3V ② 3A	TF723/43						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.1	BLAUPUNKT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5700Ω Tap ② 300Ω	3Ω	TF27/49							
	Turns Ratio									
	150 : 1	SEC.2								
	10 : 1	SEC.3								

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	BLAUPUNKT PART No.	QUAM PART No.	
SP1	7" x 10"	PM	4-6Ω	LA727/16		① Drill new mounting holes.
SP2	4" x 4"	PM	4-6Ω	LA768/2	4A15 ①	
SP3	4" x 4"	PM	4-6Ω	LA768/2	4A15 ①	
SP4	3" x 3"	Electrostatic		LSH75		
SP5	3" x 3"	Electrostatic		LSH75		

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	BLAUPUNKT PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.099A	B250C100		60-4037	126-10B1-Q D-64 ①	① Silicon Type

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BLAUPUNKT PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	Slo-Blo	0.6A 250V						

MISCELLANEOUS

ITEM No.	PART NAME	BLAUPUNKT PART No.	NOTES
M3	Lamp		TV 0.3A
M4	Tuning Cap.		2 Gang AM (Ant. 12-515mmf, Osc. 12-410mmf
M5	Tuner		FM
M6	Switch		On-Off, Slide Type
M7	Switch		Selector, Press Button Block

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA BLAUPUNKT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C44	510								2%
C45	35								2%
C46	.01	350		P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C47	.01	350		P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C48	.025	500		P688N-025		CUB6S22	GEM-6125	6TM-S25	
C49	100			SI 100	D6-101	LT6T1	UC-531	5GA-T1	
C50	100			1468-0001	D6-101	5W5T1	MC235	1FM-31	
C51	.05	350		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C52	2								2%
C53	.01	350		P488N-01	D6-103	CUB4S1	GEM-415	4TM-S5	
C54	5000			SI 5000	D6-502	LT6D5	UC-525	5GA-D5	
C55	5000			SI 5000	D6-502	LT6D5	UC-525	5GA-D5	
C56	5000			SI 5000	D6-502	LT6D5	UC-525	5GA-D5	
C57	150			1468-00015	D6-151	5W5T15	UC-5315	1FM-315	
C58	.01	350		P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C59	50			1468-00005	D6-500	5W5Q5	UC-545	1FM-45	
C60	.025	250		P688N-025		CUB6S22	GEM-6125	6TM-S25	
C61	5000			SI 5000	D6-502	LT6D5	UC-525	5GA-D5	
C62	5000			SI 5000	D6-502	LT6D5	UC-525	5GA-D5	
C63	.01	350		P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C64	250			1468-00025	D6-251	5W5T25	UC-5325	1FM-325	
C65	500			1468-0005	D6-501	5W5T5	MC245	1FM-35	
C66	10000			SI 10000	D6-103	LT6S1	DC511	5GA-S1	
C67	.01	350		P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C68	500			1468-0005	D6-501	5W5T5	MC245	1FM-35	
C69	.025	350		P488N-025		CUB4S25	GEM-4125	4TM-S25	
C70	.005	500		P688N-005	D6-502	CUB6D5	GEM-625	6TM-D5	
C71	10			SI 10	D6-100	LT6Q1	UC-541	5GA-Q1	
C72	.025	350		P488N-025		CUB4S22	GEM-4125	4TM-S25	
C73	.05	350		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C74	.15	250		P488N-15		CUB4P15	GEM-4015	4TM-P15	
C75	.25	125		P288N-25		CUB4P25	GEM-4025	4TM-P25	
C76	.075	125							

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA BLAUPUNKT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1.3meg	½	W744					Volume, Tap @ 50K & 300K
R2	16meg	½	W759					Bass
R3	1meg	½	W746					Treble
R4	300Ω	½	W727					Bias

RESISTORS

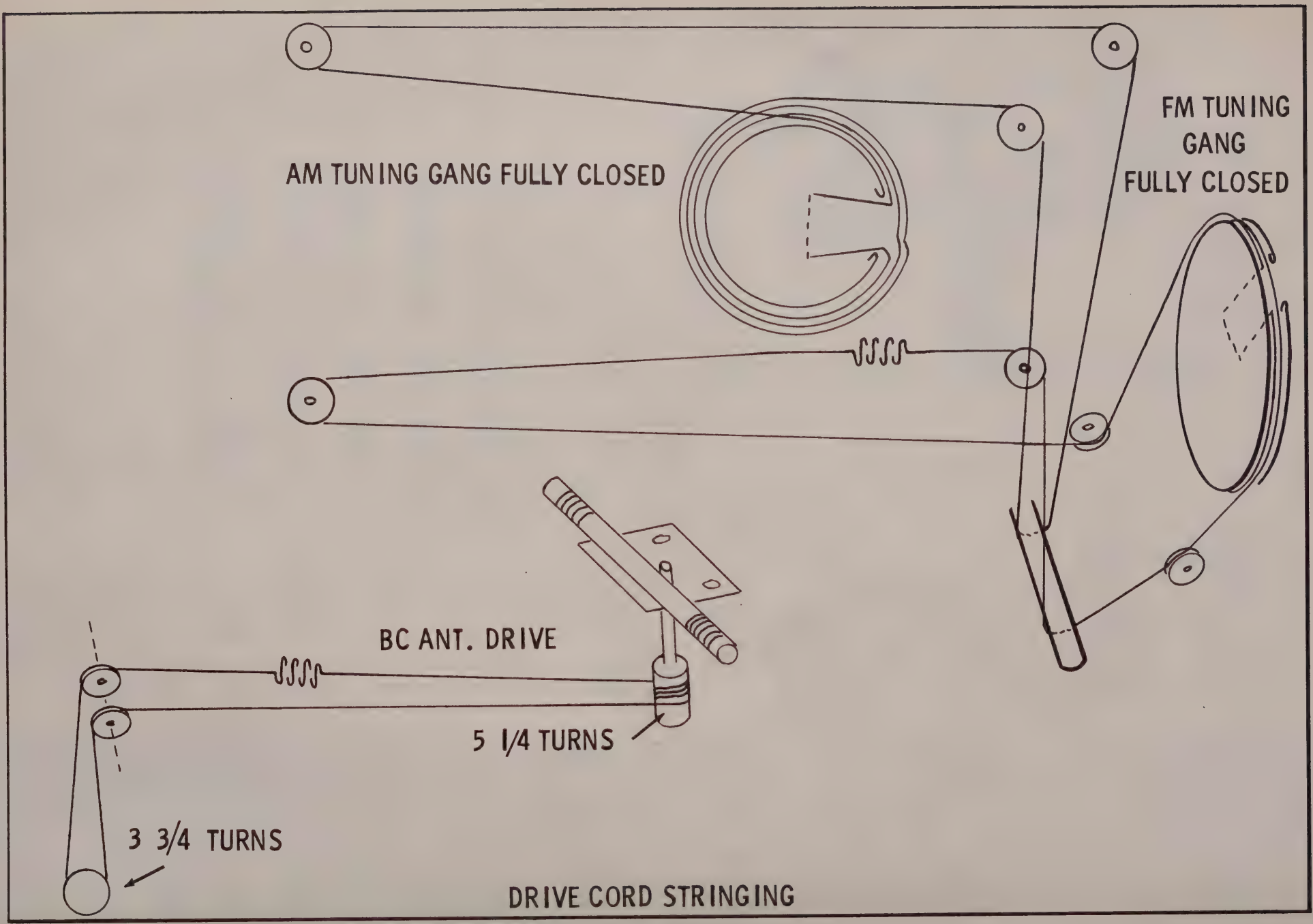
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	BLAUPUNKT PART No.	NOTES
R5	220K			
R6	33K			
R7	330K			
R8	1meg			
R9	60K			
R10	50Ω			
R11	500Ω			
R12	10K			
R13	30K			
R14	1meg			
R15	500Ω			
R16	20Ω			
R17	50K			
R18	2000Ω			
R19	125Ω			
R20	25K	1		
R21	200K			
R22	2meg			
R23	30K	2		
R24	500Ω			
R25	50K	1		
R26	2000Ω			
R27	30K			
R28	16K			
R29	1meg			

ITEM No.	RATING OHMS	RATING WATT	BLAUPUNKT PART No.	NOTES
R30	200K			
R31	300K			
R32	10meg			
R33	200K			
R34	100K			
R35	2meg			
R36	300K			
R37	8000Ω	1		
R38	100K			
R39	2meg			
R40	50K			
R41	550Ω			
R42	1000Ω			
R43	1000Ω			
R44	1meg			
R45	200K			
R46	160Ω			
R47	2000Ω			
R48	16K			
R49	3000Ω			
R50	160Ω			
R51	300Ω			
R52	300Ω			
R53	1000Ω	3		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA BLAUPUNKT PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	FM Ant. Coil						
L2	FM Ant. Trans.						
L3	RF Choke					VP-9	1.9 Microhenries
L4	Fil. Choke		19-1000	BC-561	4602		.9 Microhenries
L5A	FM RF Coil						
B	SW Osc. Coil						
L6	FM Osc. Coil						
L7	1st FM IF						
L8	AM Ant. Coil					VP-9	1.9 Microhenries
L9	IF Trap Coil						
L10	IF Trap Coil						
L11	Loop Stick						
L12	SW Ant. Trans.						
L13	BC Ant. Trans.						
L14	LW Ant. Trans.						



DRIVE CORD STRINGING

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EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

CHALLENGER MODELS CHA620, CHA620Y

CHALLENGER MODELS
CHA620, CHA620Y

MODEL CHA620Y

CHALLENGER MODELS
CHA620, CHA620Y

TRADE NAME	Challenger Models CHA620, CHA620Y
MANUFACTURER	Challenger Amplifier Co., P. O. Box 500, Paramus, N. J.
TYPE SET	AC-Battery Operated 20 Watt Audio Amplifier (Phono Omitted On Model CHA620)
TUBES (Five)	Types 12AX7 Mic Preamp.-AF Amp., 12AX7 AF Amp.-Phase Inv., (2) 6V6GT Output, 6AX5GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles (or) 6 Volt Storage Battery (or) 12 Volt Storage Battery
RATING	.83 Amp. @ 117 Volts AC, 86 Watts (or) 11 Amp. @ 6.3 Volts DC (or) 7 Amp. @ 12.6 Volts DC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Mic Preamp. - AF Amp.	12AX7	
V2	AF Amp. - Phase Inv.	12AX7	
V3	Output	6V6GT	
V4	Output	6V6GT	
V5	Rectifier	6AX5GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Challenger PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	16	500		AFH1-59	D0070			D-270	R2586 *
C2A	▲5	450		AFH4-09	D0080	WP433.6	TMQ-9	Q-027	TVL-4759.7
B	▲5	450							
C	5	450							
D	■5	450							
C3	100	25		PRS25V100	BBR100-25	TC2501	TD-100-25	MTH-2510	TVA-1207
C4	100	25		PRS25V100	BBR100-25	TC2501	TD-100-25	MTH-2510	TVA-1207
C5	50	50		PRS50V50	BR505	TC39	TD-50-50	MT-0550	TVA-1308
C6	5	220VAC		RR-717A	CRX3050	RP-3305			OP-1206

* Non-Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Challenger PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C7	.033	400		P488N-033	DF-303	CUB6S33	GEM-4133	6TM-S33	
C8	.022	400		P488N-022	DD-202	CUB4S22	GEM-4122	4TM-S22	
C9	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C10	15000			BPD-015	DD16-153	BYA10S15		5HK-S15	
C11	270				MD-271	L10T27		5TCC-T27	10%
C12	2200								10%
C13	1000								10%
C14	4700								10%
C15	15000			BPD-015	DD16-153	BYA10S15		5HK-S15	
C16	.033	400		P488N-033	DF-303	CUB6S33	GEM-4133	6TM-S33	
C17	.033	400		P488N-033	DF-303	CUB6S33	GEM-4133	6TM-S33	
C18	.015	1600		VBC-28	DD16-153	CUB16S15		MB-S15	
C19	.01	600		P688N-01	D6-103	CUB6S1	GEM-611	6TM-S1	
C20	.047	200		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C21	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C22	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C23	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Challenger PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	V367	B-60	A47-500K-Z	Q13-133	U48	Microphone
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	500K	½	V367	B-60	A47-500K-Z	Q13-133	U48	Phono
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	2meg	½	V413	B-76	A47-2meg-Z	Q13-139	U55	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R4A	2meg	½	V413	B-76	A47-2meg-Z	Q13-139	U55	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Challenger PART No.	NOTES
R5	2.2meg			
R6	220K			
R7	470K			
R8	220K			
R9	470K			
R10	220K			
R11	47K			
R12	1500Ω			
R13	220K			
R14	39K			
R15	33K			
R16	100K			
R17	220K			
R18	150K			
R19	470Ω			
R20	100K			
R21	1meg			

ITEM No.	RATING OHMS	RATING WATT	Challenger PART No.	NOTES
R22	220K			
R23	22K			
R24	2200Ω			
R25	330K			
R26	100K			
R27	10K	2		
R28	68K	2		
R29	300Ω	7(WW)		
R30	390K			
R31	22K			
R32	4700Ω	2		
R33	1000Ω			
R34	1000Ω			
R35	1Ω	1(WW)		
R36	.47Ω	1(WW)		
R37	47Ω	1		
R38	20Ω	7(WW)		

TRANSFORMER (POWER)

ITEM No.	RATING AC OPERATION PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA Challenger PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @ .83A	800VCT @ .090A	9VCT @ .8A	T378-12A						
	SEC. 3	SEC. 4	SEC. 5							
	9VCT @ .8A									
	DC OPERATION ① PRI. 1	PRI. 2	SEC. 1							
	6.3VCT @ .25A	6.3VCT @ .25A	700VCT @ .07A							
	SEC. 2	SEC. 4	SEC. 5							
	Not used									

① Primaries in parallel for 6VDC operation and in series for 12VDC operation.

TRANSFORMER (MOTOR)

ITEM No.	RATING PRI. 1	PRI. 2	SEC. 1	REPLACEMENT DATA Challenger PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	6VCT @ 1A	6VCT @ 1A	117V @ .150A Approx.	T318-12						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Challenger PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T3	10K CT	70 volt Taps @ 16Ω, 8Ω, 4Ω	T-278							

PARTS LIST AND DESCRIPTIONS (Continued)

MOTOR VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				Challenger PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	6V	60~	H-505	5560		5560	

AMP VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				Challenger PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M2	Interrupter	6V	115~	H-507	5715	859	5515	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	Challenger PART No.	ASTATIC PART No.		JENSEN PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M3	* H509B	420-TS * P-310-T	N8-1 & N8-3			* Tone arm complete with cartridge.

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	Challenger PART No.	JENSEN PART No.	WALCO PART No.	
M4	(78)	† CRA-55 or ♦ CRA-55D	† W-64S or ♦ W-64D	† Jewel ♦ Diamond
M5	(LP)	† CRA-55LP or ♦ CRA-55LPD	† W-64MGS or ♦ W-64MGD	

MISCELLANEOUS

ITEM No.	PART NAME	Challenger PART No.	NOTES
M6	Lamp		#51
M7	Switch	S468	DPST Rotary Snap Switch (Master Power)
M8	Switch	S468	DPST Rotary Snap Switch (Phono Motor)
M9	Motor	H-520	Phono

WIRING DATA

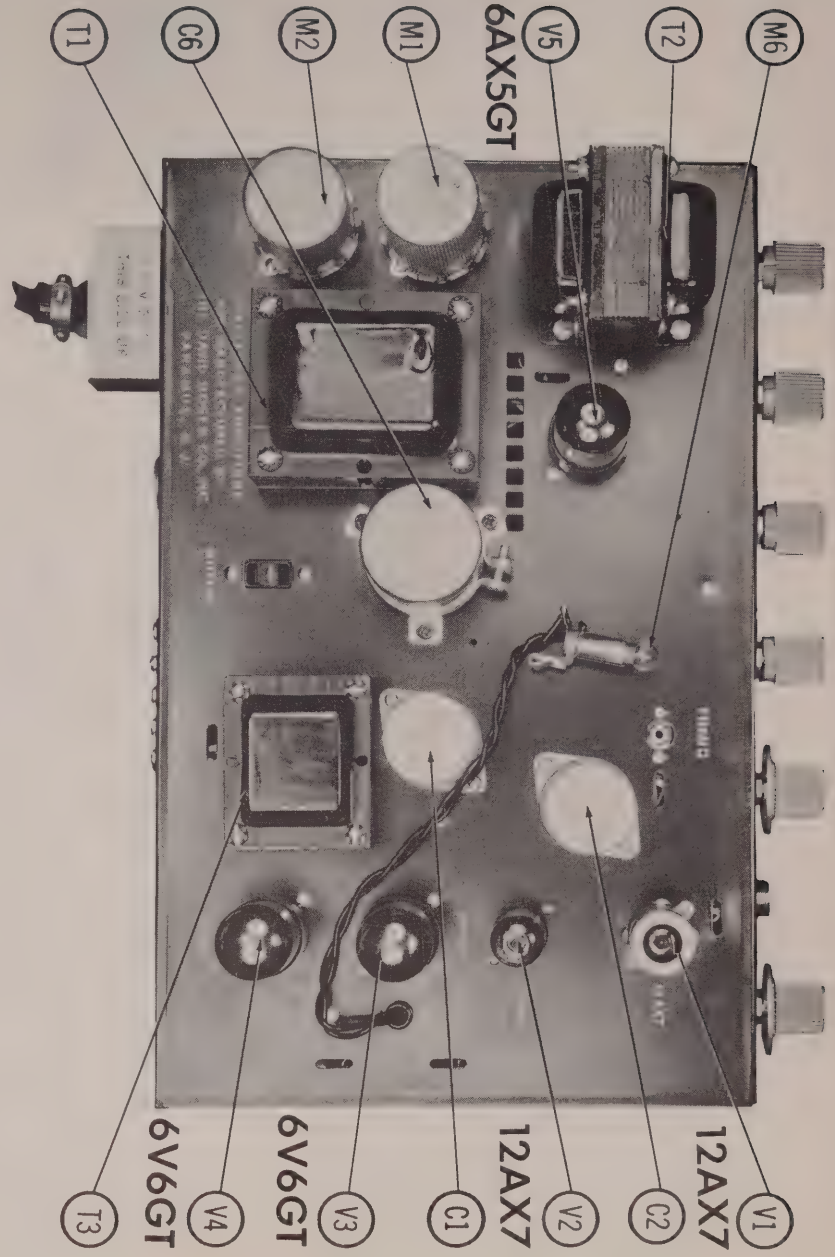
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

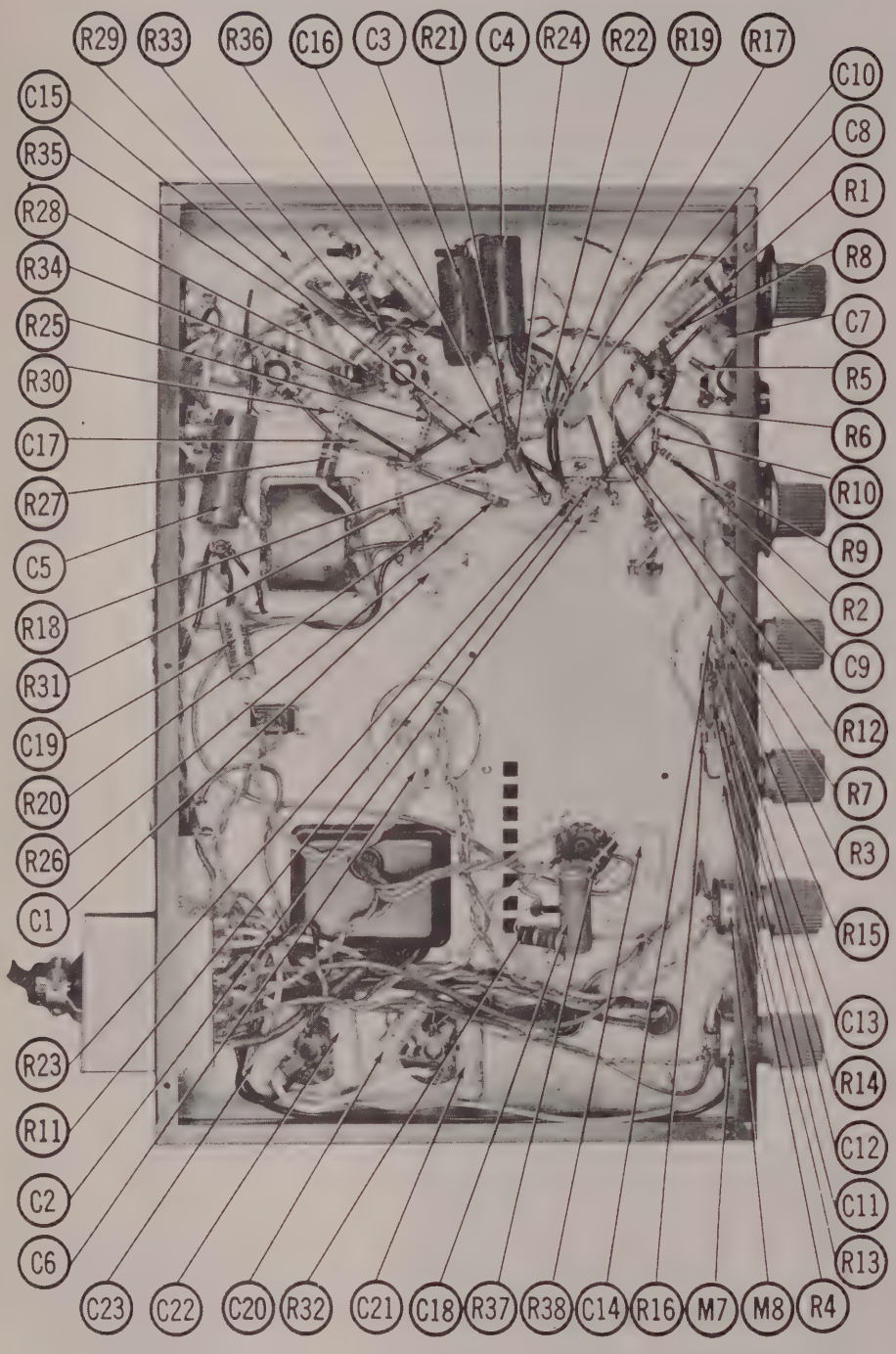
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401

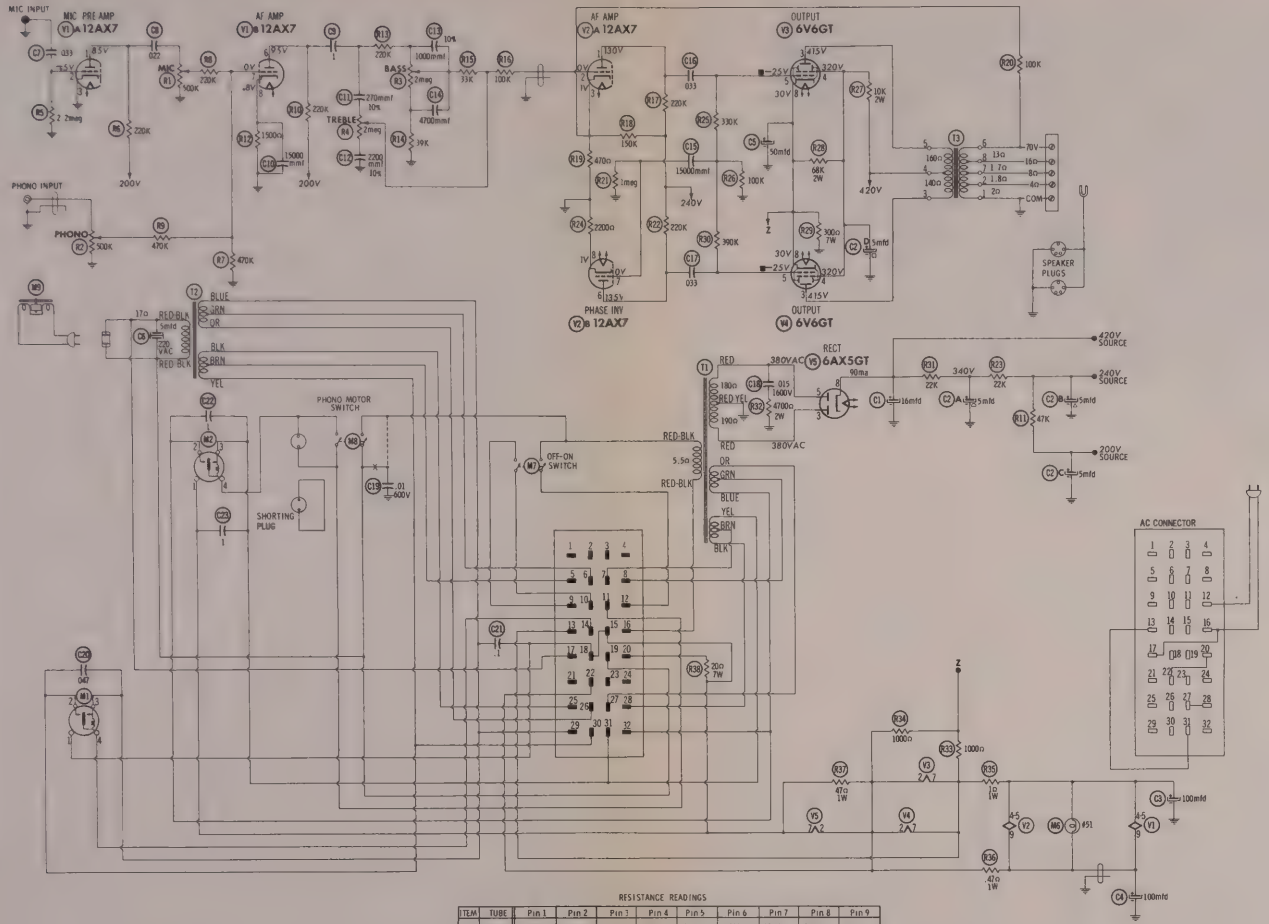
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—TOP VIEW





CHASSIS BOTTOM VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	↑310K	2.2meg	0Ω	800Ω	800Ω	↑310K	100K	1500Ω	800Ω
V2	12AX7	↑260K	160K	470Ω	800Ω	800Ω	↑260K	1meg	2200Ω	800Ω
V3	6V6GT	NC	800Ω	↑160Ω	↑10K	330K	NC	800Ω	300Ω	
V4	6V6GT	NC	800Ω	↑140Ω	↑10K	390K	NC	800Ω	300Ω	
V5	6AX5GT	NC	TP	190Ω	NC	180Ω	NC	TP	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
↑ MEASURED FROM PIN 8 OF V5
* MEASURED FROM PIN 8 OF V4
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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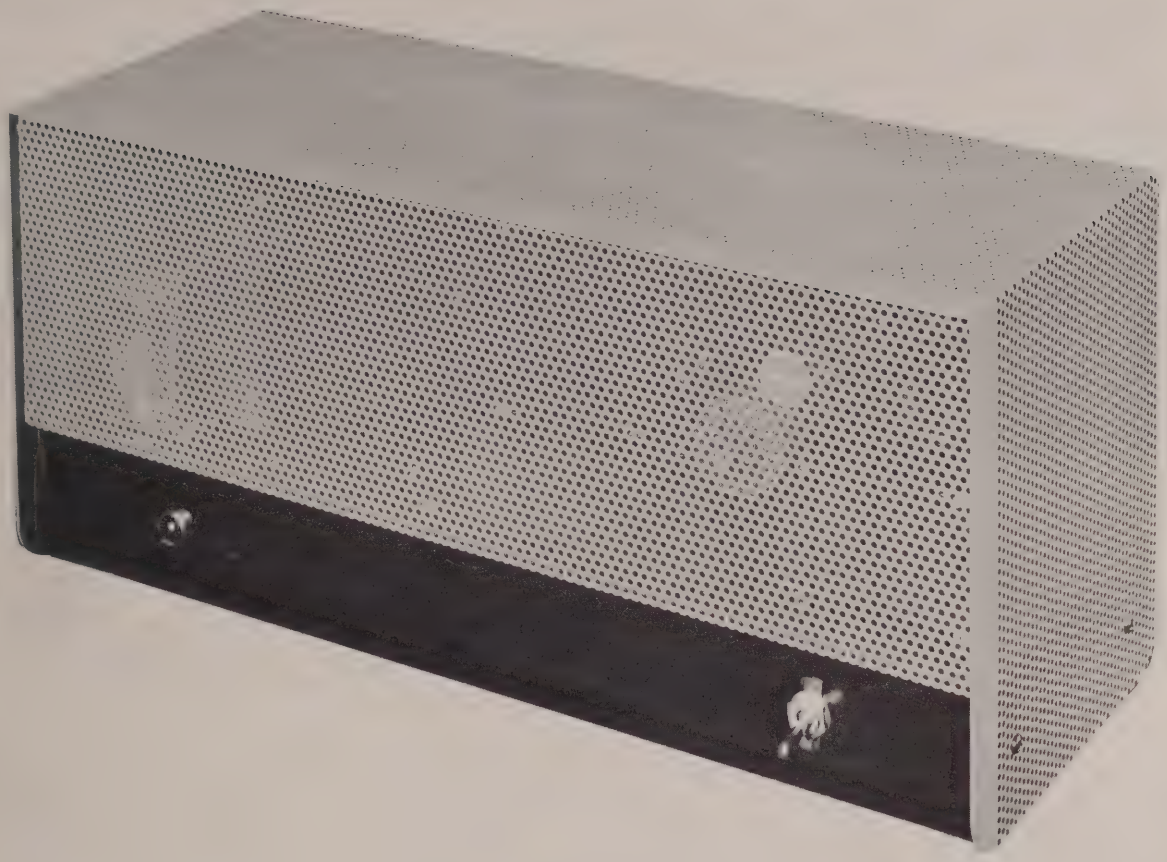
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

DAVID BOGEN
MODEL KO100

DAVID BOGEN
MODEL KO100



DAVID BOGEN
MODEL KO100

TRADE NAME	David Bogen Model KO100	
MANUFACTURER	David Bogen Co., P. O. Box 500, Paramus, N. J.	
TYPE SET	AC Operated 100 Watt Audio Amplifier	
TUBES (Six)	Types 6U8 AF Amp. - Phase Inv., (2) 6CA7/EL34 Output, (2) 5R4GYA Rectifier, EZ81/6CA4 Rectifier	
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING 2.58 Amp. @ 117 Volts AC (250 Watts) Full Output .46 Amp. @ 117 Volts AC (90 Watts) Zero Signal

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H683

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amp. - Phase Inv.	6U8	
V2	Output	6CA7/EL34	
V3	Output	6CA7/EL34	

ITEM No.	USE	TYPE	NOTES
V4	Rectifier	5R4GYA	
V5	Rectifier	5R4GYA	
V6	Rectifier	EZ81/6CA4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	David Bogen PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	30	475		PRS500V30	BR3050	TC84	TD-30-500	MT-4720 MT-4710	R2344 *
C2	30	475		PRS500V30	BR3050	TC84	TD-30-500	MT-4720 MT-4710	R2344 *
C3A	■10	450	①	AFH4-10	D0090	FP434	TMQ-10	Q-030	TVL-4760
B	10	450	②						
C	▲10	450							
D	▲10	450							
C4	50	100		PRS150V50	BR5015	TC49	TD-50-150	MT-1550	TVA-1414
C5	5	200		PRS250V4	BBR4-250	TC50X	TD-4-250	MT-4504	TVA-1501

① Some versions may use 20mfd in this application. ② Not used in some versions. * Non-Catalog Item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	David Bogen PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C6	1.2								
C7	100			NPO-DI 100	DD-101	L10T1	ZT-531	5TCC-T1	10%
C8	.068	200		P288N-068		CUB4S68	GEM-4168	4TM-S68	
C9	.1	600		P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C10	.1	600		P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C11	3300					1R5D33		MS-233	10%
C12	3300					1R5D33		MS-233	10%
C13	.22	200		P288N-22		CUB2P22	GEM-2022	2TM-P22	
C14	.015	1600		P1688N-015	DD16-153	CUB16S15		MB-S15	
C15	.015	1600		P1688N-015	DD16-153	CUB16S15		MB-S15	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	David Bogen PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	V275B	AB-60	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			AK-1	FKS-1/4	RQ	Not Req.	
R2A	25K	½	V410A	AB-26 ①	A47-25K-S ①	B11-120	TA253L	Bias Adj.
B	Shaft			AK-1	FKS-1/4	TM1	Not Req.	

① Enlarge mounting hole to 3/8".

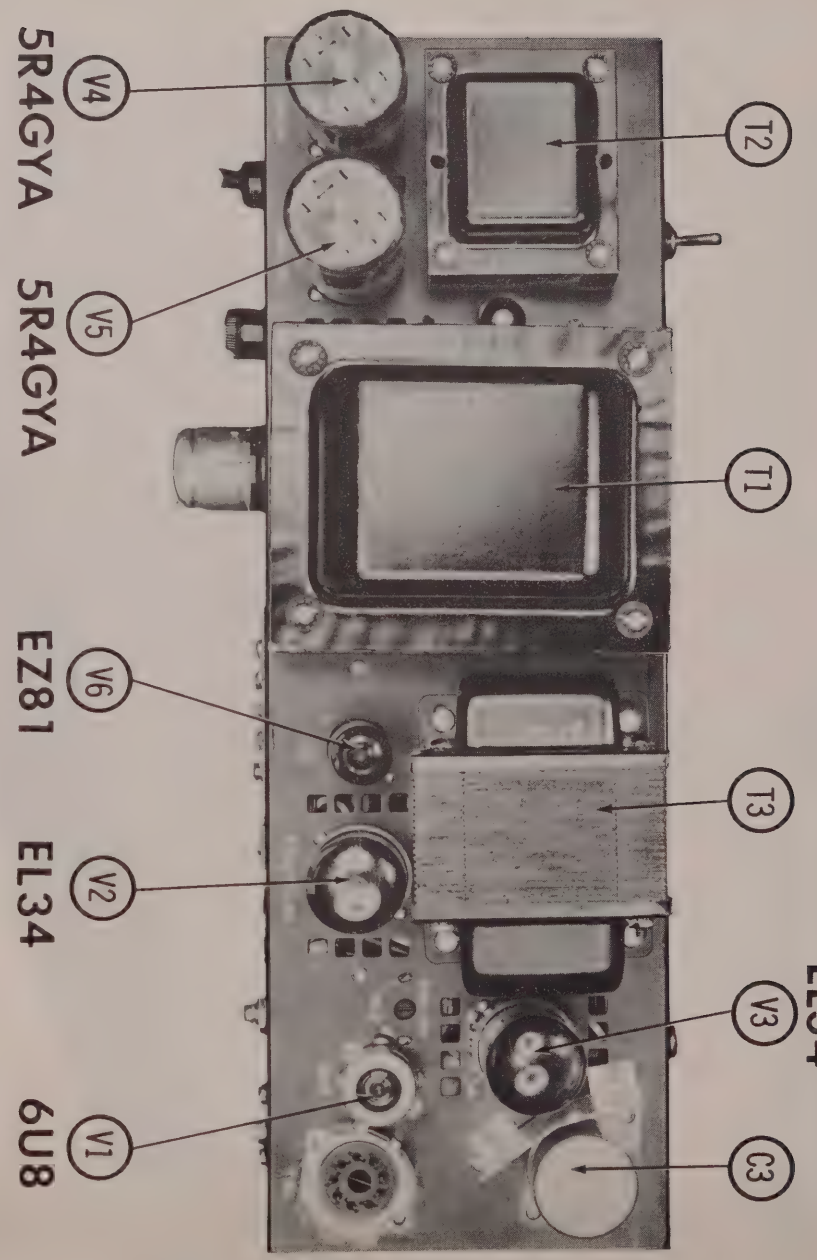
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	David Bogen PART No.	NOTES
R3	100K			
R4	470K			
R5	22K			
R6	27K			
R7	470K			
R8	390Ω			
R9	150K	2		
R10	27K			
R11	12K			
R12	100K			
R13	390K			
R14	150K			
R15	15K			
R16	68K			

ITEM No.	RATING OHMS	RATING WATT	David Bogen PART No.	NOTES
R17	100K			
R18	15Ω			
R19	100K			
R20	15Ω			
R21	300Ω	7(WW)		
R22	3000Ω	7(WW)		
R23	200Ω	7(WW)		
R24	33K	1		
R25	1meg			
R26	1meg			
R27	4.7Ω			
R28	330Ω	2		
R29	330Ω	2		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	David Bogen PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	125V Tap ② 117V ② 2A	1150VCT ② .200A Tap ② 38V ② .002A	600VCT ② .070A	T3168-4						

TRANSFORMER (FIL)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	David Bogen PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	125V Tap ② 117V ② .5A	5V ② 4A	6.3VCT ② 4.1A	T3169-1						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.1	David Bogen PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T3	6500Ω CT	49Ω (70V) SEC.2 6.25Ω (25V) CT	T2134-1							

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	David Bogen PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.0007A	H373	1159	D-5410	10	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			David Bogen PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	1½A 125V S/B			31301.5 (1½A 125V S/B)	342001	MDX1½	HKP
M3	3AG	5A 125V S/B			313005. (5A 125V S/B)	342001	MDX5	HKP

MISCELLANEOUS

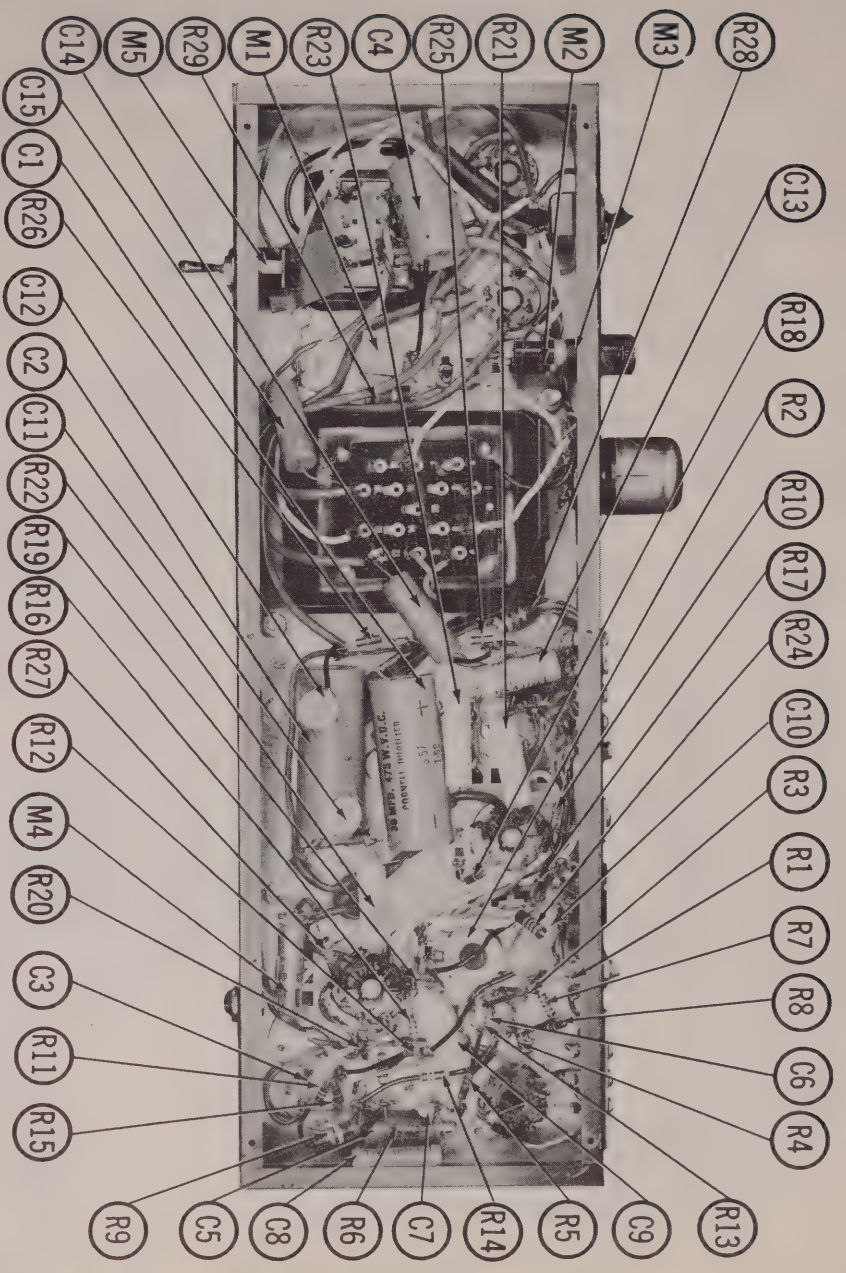
ITEM No.	PART NAME	David Bogen PART No.	NOTES
M4	Pilot Lamp		#47
M5	Switch Control Unit	S191B Model KR-6	Power On-Off, SPST Toggle Remote, Operate-Standby

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

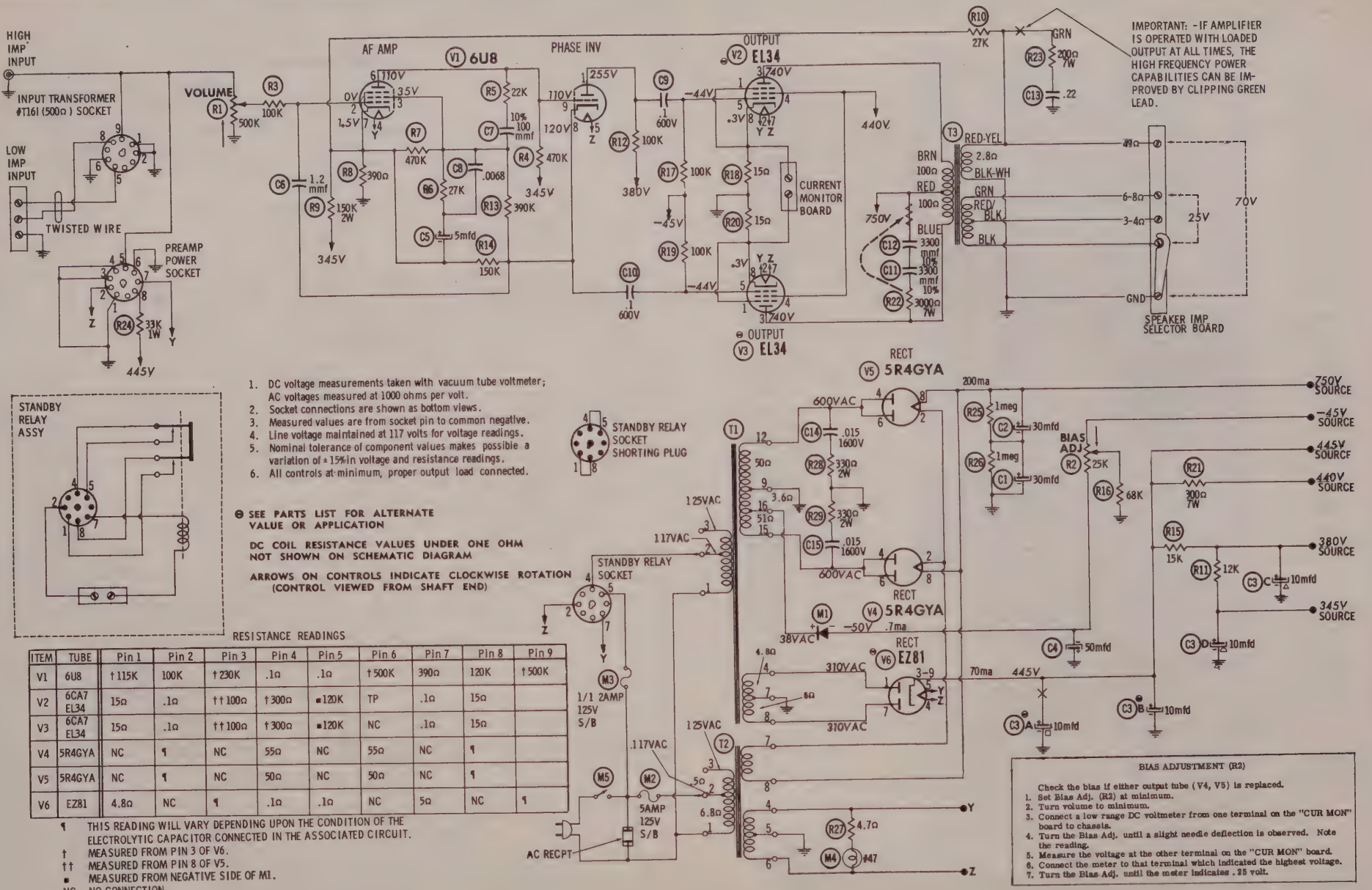
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—BOTTOM VIEW



DAVID BOGEN
MODEL KO100

DAVID BOGEN
MODEL KO100



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6U8	†115K	100K	†230K	.1Ω	.1Ω	†500K	390Ω	120K	†500K
V2	6CA7 EL34	15Ω	.1Ω	††100Ω	†300Ω	▪120K	TP	.1Ω	15Ω	
V3	6CA7 EL34	15Ω	.1Ω	††100Ω	†300Ω	▪120K	NC	.1Ω	15Ω	
V4	5R4GYA	NC	¶	NC	55Ω	NC	55Ω	NC	¶	
V5	5R4GYA	NC	¶	NC	50Ω	NC	50Ω	NC	¶	
V6	EZ81	4.8Ω	NC	¶	.1Ω	.1Ω	NC	5Ω	NC	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
† MEASURED FROM PIN 3 OF V6.
†† MEASURED FROM PIN 8 OF V5.
▪ MEASURED FROM NEGATIVE SIDE OF M1.
NC NO CONNECTION
TP TIE POINT

BIAS ADJUSTMENT (R2)

Check the bias if either output tube (V4, V5) is replaced.
1. Set Bias Adj. (R2) at minimum.
2. Turn volume to minimum.
3. Connect a low range DC voltmeter from one terminal on the "CUR MON" board to chassis.
4. Turn the Bias Adj. until a slight needle deflection is observed. Note the reading.
5. Measure the voltage at the other terminal on the "CUR MON" board.
6. Connect the meter to that terminal which indicated the highest voltage.
7. Turn the Bias Adj. until the meter indicates .25 volt.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

DEWALD
MODEL L-703

DEWALD
MODEL L-703

TRADE NAME	Dewald Model L-703
MANUFACTURER	Dewald Radio Mfg. Corp., 35-15 37th Ave., Long Island City 1, N. Y.
TYPE SET	Battery Operated Portable AM Transistorized Receiver
POWER SUPPLY	9 Volts DC
TUNING RANGE—BROADCAST	540-1650KC
RATING	7.6MA @ 9 Volts DC(No Signal, Min Volume) 11MA @ 9 Volts DC(Signal, Normal Volume)

DEWALD
MODEL L-703

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455KC (400∿ Mod.)	Tuning Gang Fully Open	Across Voice Coil	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.		"	1600KC	1600KC	"	A4	"
3.		"	600KC	600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output while rocking gang thru. Repeat Steps 2 and 3
4.		"	1400KC	Tune For 1400KC Signal	"	A6	"

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SET 422 FOLDER 8

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N137	Converter		2N140	2N486	2N139	PNP ①
X2	2N135	1st IF Amplifier		2N139	2N482	2N139	PNP ②
X3	2N135	2nd IF Amplifier		2N139	2N482	2N139	PNP ②
X4	2N192	Driver			2N362	2N109	PNP ③
X5	2N188	Output	CBS-2N181		2N632	2N241A	PNP ④
X6	2N188	Output	CBS-2N181		2N632	2N241A	PNP ④

① Alternate Types: 2N112, CK760
② Alternate Types: 2N111A, 2N112A, CK759A, CK760A
③ Alternate Types: 2N132, CK882
④ Alternate Types: 2N138, CK888

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DEWALD PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	100	15		SRE15V100	BBR100-15	TT15X100	ML100-15		TE-1162
C2	10	7		XPP-10010	NL10-10	TT12X10	ML10-15		TE-1114
C3	5	10	①	XPP-10005	NL5-15	TT12X5	ML5-15		TE-1127
C4	50	5		XPP-6050	NL50-6	TT6X50	ML50-6	MQ-0650	TE-1100

① Some versions may use 2mfd in this application.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	DEWALD PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C6	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C7	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C8	10			SII0	D6-100	LT6Q1	UC-541	5GA-Q1	
C9	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C10	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C11	2.7								
C12	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C13	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C14	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C15	5000			BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C16	.05	200		P288N-05	DF-503	CUB2S5	GEM-215	2TM-S5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DEWALD PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	5000Ω	½	V-310B-3	B-11		Q13-114	U12	Volume Note 1
B	Shaft			Not Req.		Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*		76-1	US-26	

* Use KR with CRL "Red Label" controls and KB with "Blue Label" controls
Note 1. Part #V-310-1 may be used in some versions

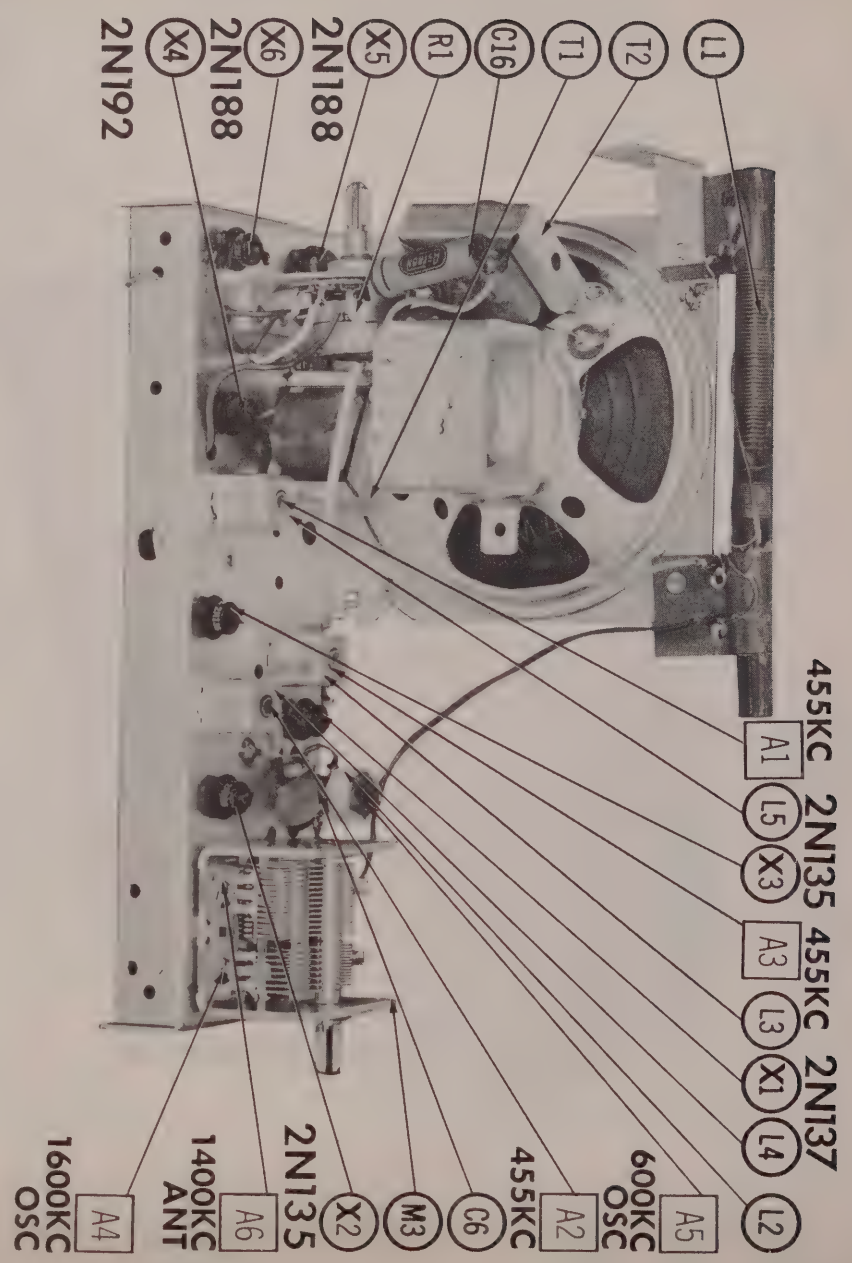
RESISTORS

All wattages 1/2 watt or less, unless otherwise listed.

ITEM No.	RATING		DEWALD PART No.	NOTES
	OHMS	WATT		
R2	33K			
R3	6800Ω			
R4	3900Ω			
R5	2200Ω			
R6	330Ω			
R7	100K			
R8	4700Ω			
R9	4700Ω			
R10	47K			
R11	12K			

ITEM No.	RATING		DEWALD PART No.	NOTES
	OHMS	WATT		
R12	2200Ω			
R13	2200Ω			
R14	33K			
R15	6800Ω			
R16	1000Ω			
R17	82Ω			
R18	15K			
R19	15K			
R20	10Ω			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		DEWALD PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loop Stick	L-150					
L2	Osc. Coil	O-149	14-9010	BC-403	2022		
L3	1st IF	I-139-1	16-9002		9-C1		
L4	2nd IF	I-139-2	16-9002		9-C2		
L5	3rd IF	I-139-3	16-9014		9-C2		

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	DEWALD PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2	: 1	T-1204						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	DEWALD PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	850Ω CT	3-4Ω	38073-1							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DEWALD PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	S-715	4A07	

BATTERIES

ITEM No.	VOLTAGE	DEWALD PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			D6		276		M-1603	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		DEWALD PART No.	CBS PART No.	SYLVANIA PART No.	
M2	1N60①		1N60	1N295	Detector (Pigtail)

① Alternate type 1N295

MISCELLANEOUS

ITEM No.	PART NAME	DEWALD PART No.	NOTES
M3	Tuning Cap	V-217-3	Two-Gang (Ant. 35-395mmf, Osc. 17-108mmf)

CABINETS & CABINET PARTS

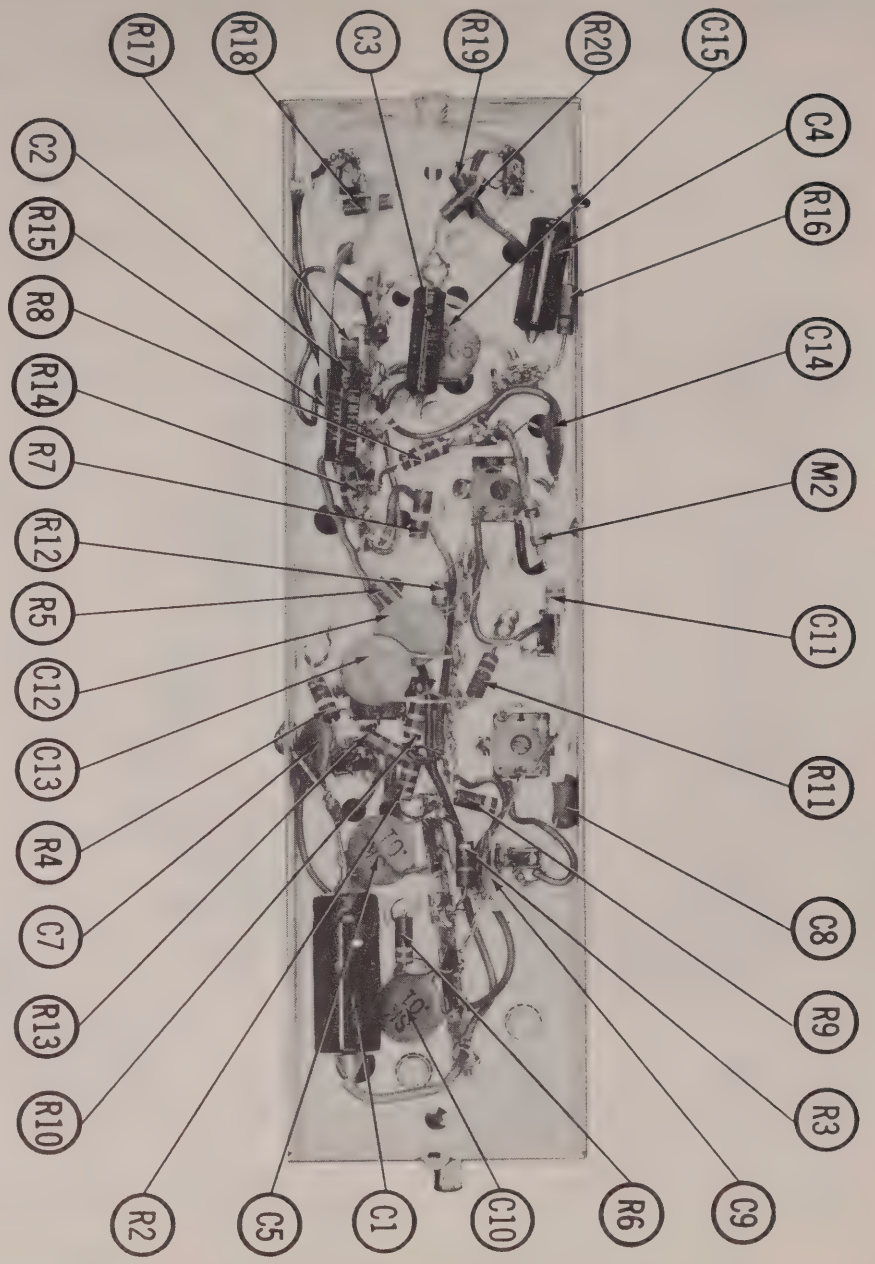
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	K-452-4	Volume
Knob	K-467	Tuning
Cabinet	C-461	

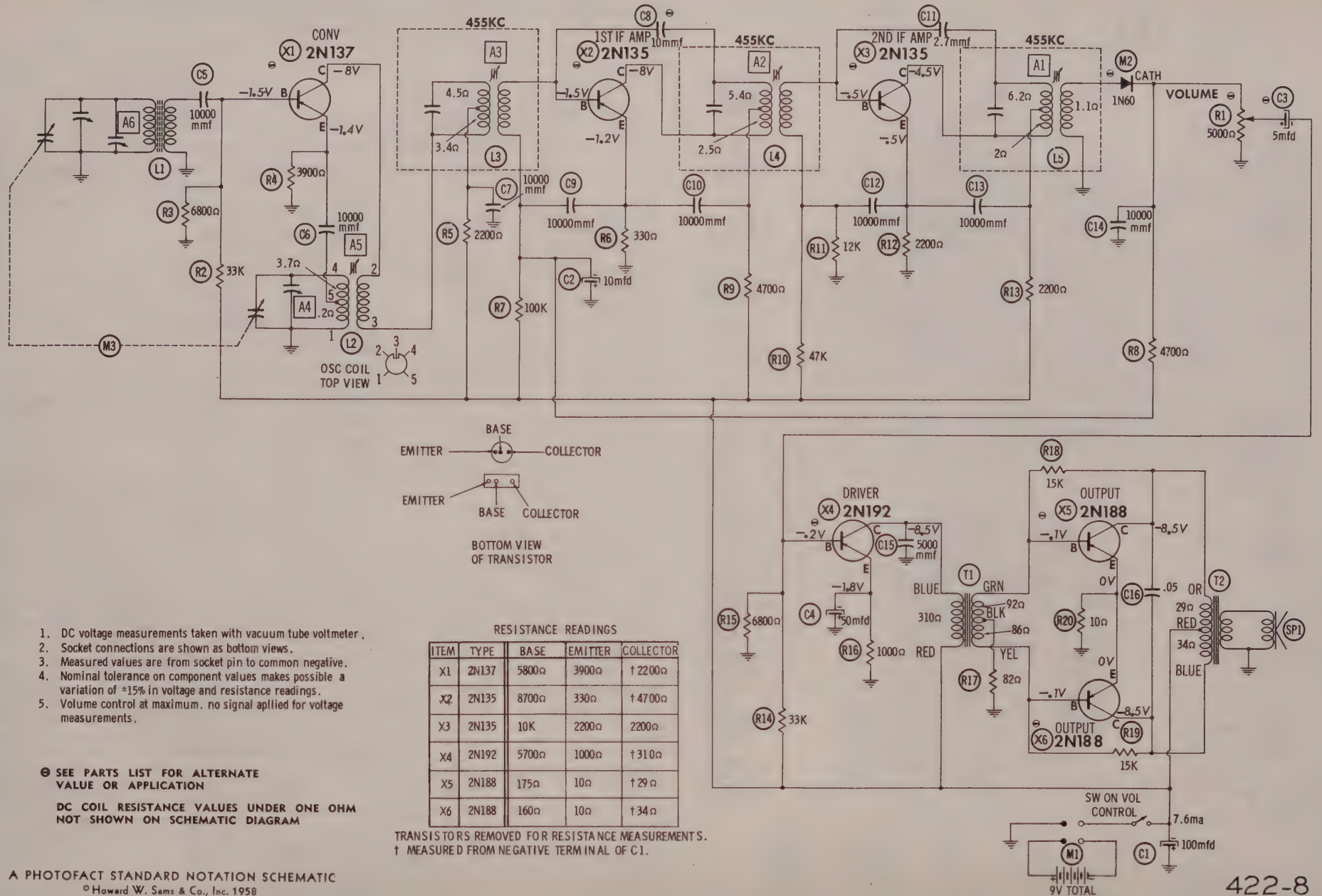
WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—BOTTOM VIEW



FOLDER 8
DEWALD MODEL L-703



1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum. no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE READINGS

ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1	2N137	5800Ω	3900Ω	†2200Ω
X2	2N135	8700Ω	330Ω	†4700Ω
X3	2N135	10K	2200Ω	2200Ω
X4	2N192	5700Ω	1000Ω	†310Ω
X5	2N188	175Ω	10Ω	†29Ω
X6	2N188	160Ω	10Ω	†34Ω

TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS.
† MEASURED FROM NEGATIVE TERMINAL OF C1.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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FISHER MODELS 125-A, 125-AX

FISHER MODELS
125-A, 125-AX

MODEL 125-AX

TRADE NAME	Fisher Models 125-A, 125-AX		
MANUFACTURER	Fisher Radio Corp., 21-21 44th Drive, Long Island City 1, N.Y.		
TYPE SET	AC Operated Audio Amplifier		
TUBES (Ten)	Types 12AU7 AF Amp.-Phase Inv., 12AX7 Driver, (4) EL34/6CA7 Output, 6AU6 Volt. Reg. Cont., 6Y6GT Volt. Regulator, (2) 5R4GY Rectifier		
POWER SUPPLY	105-125 Volts AC-50/60 Cycles	RATING	1.92 Amp. @ 117 Volts (200 Watts)

ADJUSTMENTS

PERFORMANCE MONITOR ADJUSTMENTS (R2, R3, R4)

1. Connect a 16Ω load to the output terminals.
2. Short the input jack.
3. Turn Level Adjust (R5) fully counterclockwise.
4. Remove the 3 caps covering these adjustments. Turn each control to its mechanical center of rotation.
5. Turn on the amplifier and adjust input voltage to 117 Volts.
6. Hold Monitor Switch in "Screen Volts" positions. Rotate Screens (R2) until meter pointer coincides with screen mark on meter.
7. With Monitor Switch in "Plate Current" position, rotate Plate Current (R3) until pointer coincides with plate mark on meter.
8. Hold Monitor Switch in "Output Balance" position. Rotate Balance (R4) until pointer coincides with balance mark on meter, or is within 1/8 inch.
9. Check all three adjustments and repeat if necessary. Recheck after 30 minutes.
10. If proper indications are not obtained, check output tubes (V3, V4, V5, V6).

DRIVER BALANCE ADJUSTMENT (R6)

This adjustment is not necessary unless the associated circuit has been tampered with or repaired, and then only if the proper equipment is available.

1. Connect an accurately calibrated, low distortion audio generator to the input receptacle.
2. Connect a 16Ω 150W resistor across the output terminals.
3. Connect either a harmonic or intermodulation distortion analyzer across the resistor.
4. Set Impedance Matching Switch (M7) to 16Ω position.
5. Turn Z-Matic Control (R1) fully counterclockwise.
6. Set the generator to 1000∿ with an output slightly below the clipping point of the amplifier output. Keep generator output constant.
7. Adjust Driver Balance (R6) for minimum distortion on the analyzer.

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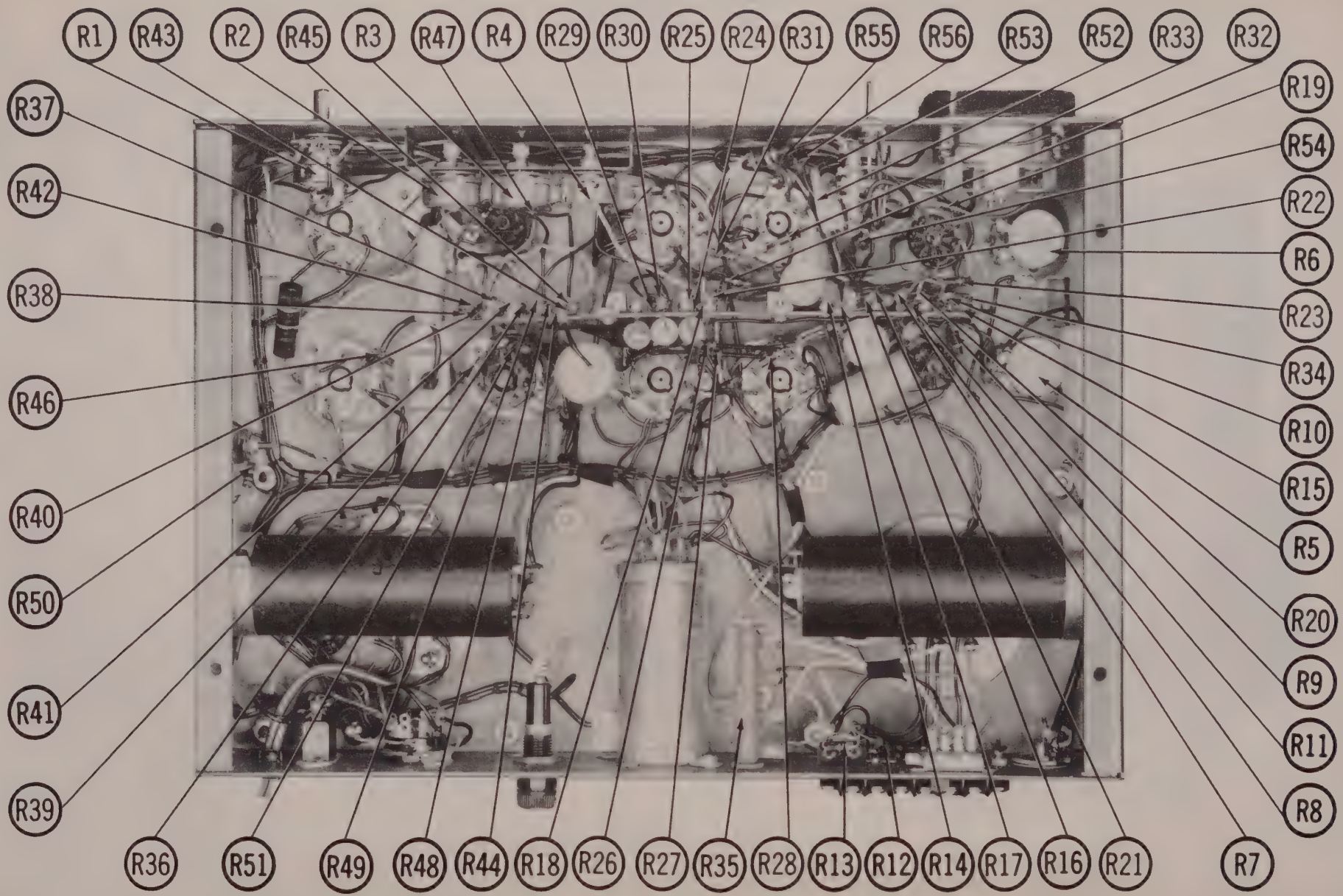
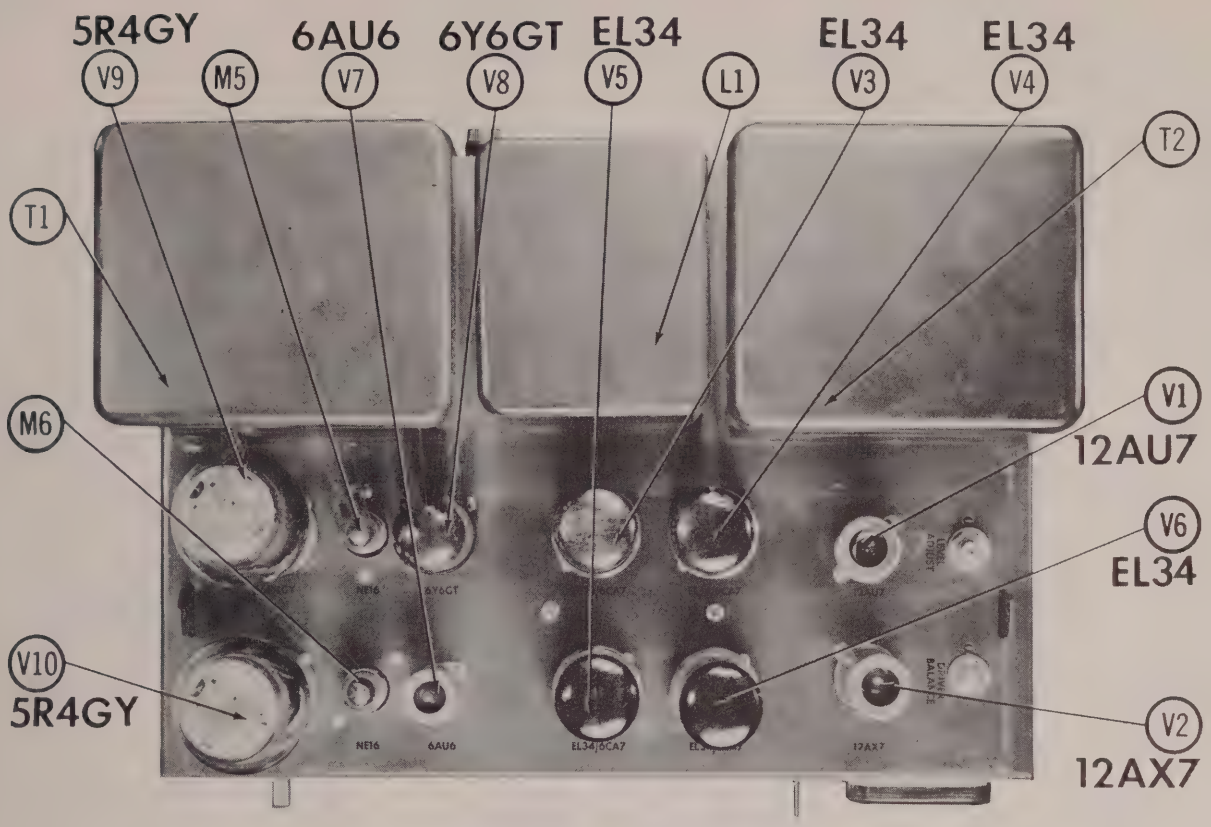
H691

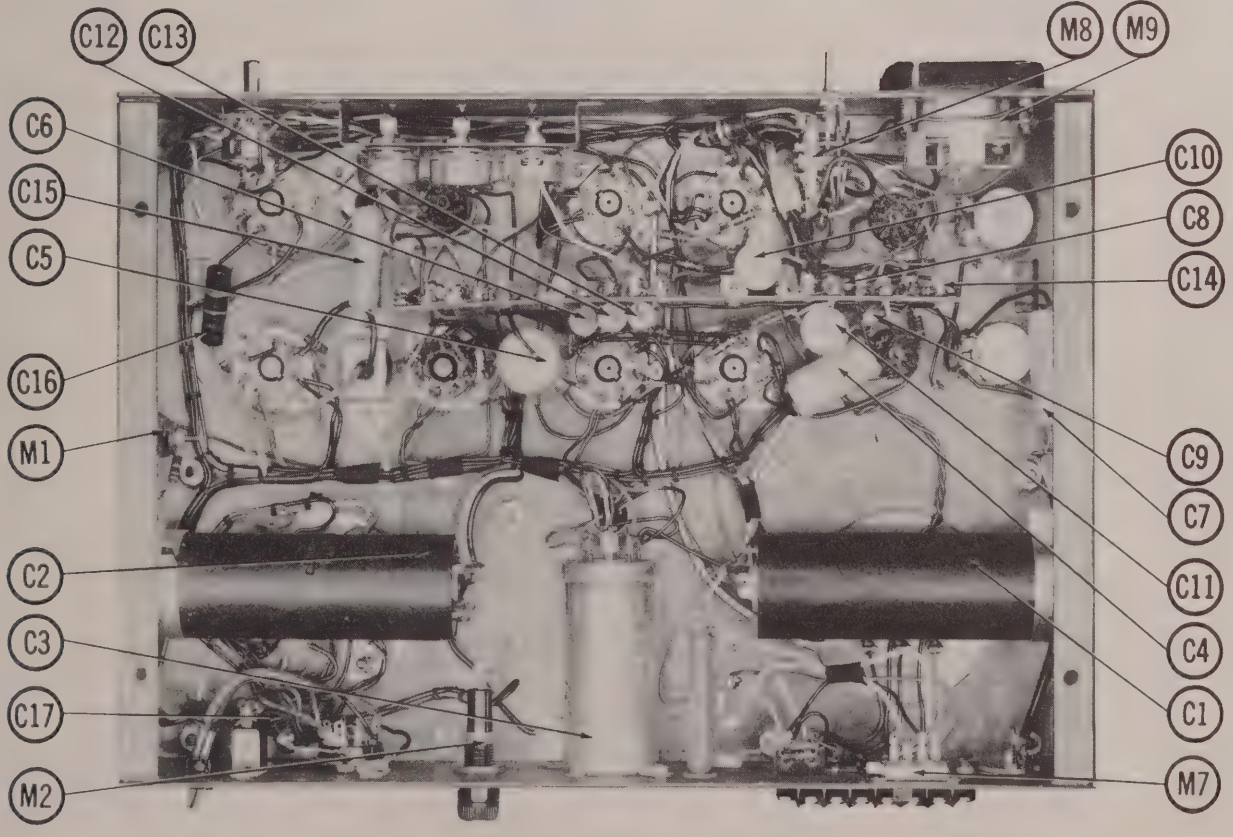
SET 422 FOLDER 9



CHASSIS BOTTOM VIEW - RESISTOR IDENT.



CHASSIS - TOP VIEW



CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	AF Amp. -Phase Inv.	12AU7
V2	Driver	12AX7
V3	Output	EL34/6CA7 ①
V4	Output	EL34/6CA7 ①
V5	Output	EL34/6CA7 ①
V6	Output	EL34/6CA7 ①
V7	Volt Reg. Control	6AU6
V8	Volt Regulator	6Y6GT
V9	Rectifier	5R4GY
V10	Rectifier	5R4GY

① Domestic type listed may not be directly interchangeable in some instances. Output tubes are matched and color coded. Replace with a tube matching the characteristics of the like coded tube in the other parallel branch.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	FISHER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	120	475	C-581-135	AFH2-66-50	B0489	FP264.5	TMD-93	T-195 MT-4720	TVL-2850
C2	120	475	C-581-135	AFH2-66-50	B0489	FP264.5	TMD-93	T-195 MT-4720	TVL-2850
C3A	▲40	450	C-563-127	AFH3-43-50	C0344	FP376.9	TMT-39	Q-061	TVL-3786
B	■40	450							
C	▲20	450							
C4	1	450	C-581-134	PRS450V1	BR145			MMT-4501	R1260*
C5	40	250	C-581-133	PRS250V40	BR4025	TC58	TD-40-250	MT-2540	TVA-1511
C6	1	250	C-546-126	PRS450V1	BR145	TT250X1		MMT-4501	R2622*

* Non-Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	FISHER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C7	.22	200	C68P224V2	P288N-22		CUB2P22	GEM-2022	2TM-P22	
C8	500		CC21GP501K5	SI500	D6-501	LT6T5	UC-535	5GA-T5	
C9	150		CC21GJ151K5	NPO-SI150	D6-151	CTA6T15C	ZT-5315	5TCC-T15	10%
C10	.22	400	C68P224M4	P488N-22		CUB4P22	GEM-4022	4TM-P22	
C11	.22	400	C68P224M4	P488N-22		CUB4P22	GEM-4022	4TM-P22	
C12	.022	400	C68P223M4	P488N-022	DD-203	CUB4S22	GEM-4122	4TM-S22	
C13	.022	400	C68P223M4	P488N-022	DD-203	CUB4S22	GEM-4122	4TM-S22	
C14	300		CC21GP301K5		D6-301				10%
C15	.047	400	C68P473M4	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C16	.01	1000	C-3357	P1088N-01	DD16-103	CUB16S1	GEM-1611	MB-S1	
C17	.01	600	C-2747	P688N-01	DD-103	CUB6S1	GEM-611	6TM-S1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	FISHER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1000Ω	½	R-581-125					Z-Matic
B	Switch							
R2A	50K	½	5-581-128	AB-31	A47-50K-S	Q11-123	U35	Screen
B	Shaft			AK-1	FKS-1/4	RQ	Not Req.	
R3A	50K	½	R-581-128	AB-31	A47-50K-S	Q11-123	U35	Plate Current
B	Shaft			AK-31	FKS-1/4	RQ	Not Req.	
R4A	50K	½	R-581-127	ABT-33	A47F-50K			Balance , Tap ⓐ 25K
B	Shaft			AK-1	FKS-1/4			
R5A	500K	½	R-2815-9	AB-59	A47-500K-S	Q11-133	U50	Level Adjust
B	Shaft			AK-1	FKS-1/4	RQ	Not Req.	
R6A	500Ω	½	R-581-126	AB-4	A47-500-S	Q11-103	U2	Driver Balance
B	Shaft			AK-1	FKS-1/4	RQ	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		FISHER PART No.	NOTES
	OHMS	WATT		
R7	22K		RC20BF223K	
R8	270K		RC20BF274K	Note 1
R9	2200Ω		RC20BF222K	
R10	1000Ω		RC20BF102K	
R11	2200Ω		RC20BF222K	
R12	2200Ω		RC20BF222K	
R13	330Ω		RC20BF331K	
R14	47K 5%		RC20BF473J	
R15	10K		RC20BF103K	
R16	47K 5%		RC20BF473J	Note 1
R17	470K		RC20BF474K	
R18	100K 5%		RC20BF104J	
R19	220Ω		RC20BF221K	
R20	2200Ω		RC20BF222K	
R21	470K		RC20BF474K	
R22	100K 5%		RC20BF104J	
R23	220Ω		RC20BF221K	
R24	3.3meg		RC20BF335K	
R25	220K		RC20BF224K	
R26	68Ω		RC20BF680K	
R27	100Ω		RC20BF101K	
R28	68Ω		RC20BF680K	
R29	3.3meg		RC20BF335K	
R30	220K		RC20BF224K	
R31	68Ω		RC20BF680K	
R32	100Ω		RC20BF101K	
R33	68Ω		RC20BF680K	
R34	2200Ω		RC20BF222K	
R35A	1Ω	3.5	(WW)	
B	1Ω	3.5	(WW) R-581-129	
C	.8Ω	3	(WW)	Note 2
R36	27K		RC20BF273K	
R37	10K		RC20BF103K	
R38	100K		RC20BF104K	
R39	220K		RC20BF224K	
R40	100K		RC20BF104K	
R41	150K		RC20BF154K	
R42	220K	1	RC30BF224K	
R43	22K	1	RC30BF223K	
R44	220K-1meg			Note 3
R45	56K		RC20BF563K	Note 4
R46	22K		RC20BF223K	
R47	8200Ω		RC20BF822K	
R48	39K		RC20BF393K	
R49	680K		RC20BF684K	
R50	68Ω		RC20BF680K	
R51	2200Ω		RC20BF222K	
R52	15Ω	7	(WW) R-581-137	
R53	82Ω	2	RC40BF820K	Note 5
R54	82Ω	2	RC40BF820K	Note 5
R55	82K 5%	2	RC40BF823J	
R56	1-5meg			Note 3
R57	150-500Ω			Note 3

Note 1. R8 and R16 may be reversed in some versions.
Note 2. Not used in Model 125 A.
Note 3. Not used in some versions. When used, value may vary. Replace with original value.
Note 4. Some versions may use 120K in this application
Note 5. R53 and R54 should be a matched pair.

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 ~	FISHER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L1	.160A	40Ω	5.5HY	L-581-131						

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	FISHER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ 1.92A	1350VCT @ .180A Tap @ 150V @ .004A	5V @ 3.9A	T-581-147						
	SEC. 3	SEC. 4	SEC. 5							
	6.3VCT @ 7.6A	6.3V @ .27A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI. 1	SEC.	FISHER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	1600Ω PRI. 2 1600Ω	72Ω (70V) Taps @ 16Ω 8Ω 4Ω	T-581-148①							① Part #T-581-122 used in Model 125A only.

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	FISHER PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.004A.	SR-588-128		D-5413	10T	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			FISHER PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	8A 125V	F-581-154	X-1036	312008. (8A 125V)	342001	GLH8	HKP

MISCELLANEOUS

ITEM No.	PART NAME	FISHER PART No.	NOTES
M3	Lamp	I-588-120	Meter
M4	Lamp	I-588-120	Meter
M5	Lamp		Neon, NE-16
M6	Lamp		Neon, NE-16
M7	Switch	S-557-138	Impedance Matching, DPST, Slide Type, Model 125AX
	Switch	S-505-117	Impedance Matching, DPST, Slide Type, Model 125A
M8	Switch	S-581-124	Performance Monitor, Rotary, Wafer, Lever Type
M9	Meter	M-581-130	Performance Monitor

CABINETS & CABINET PARTS

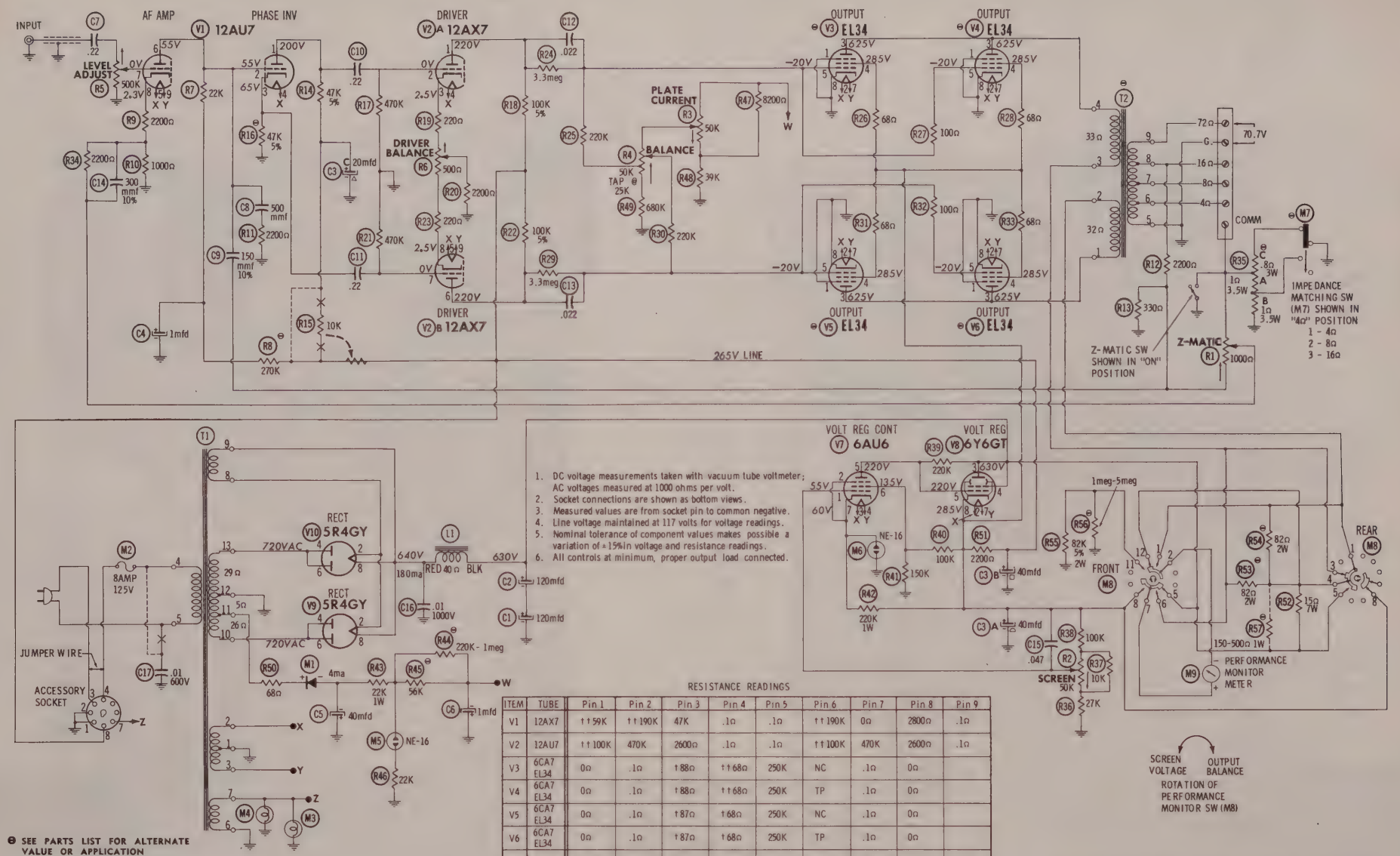
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	E-588-118	Z-Matic
Knob	E-546-135	Performance Monitor Lever
Cover	AS-581-107CX	Perforated
Dress Panel	AS-581-109B	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	††59K	††190K	47K	.1Ω	.1Ω	††190K	0Ω	2800Ω	.1Ω
V2	12AU7	††100K	470K	2600Ω	.1Ω	.1Ω	††100K	470K	2600Ω	.1Ω
V3	6CA7 EL34	0Ω	.1Ω	†88Ω	††68Ω	250K	NC	.1Ω	0Ω	
V4	6CA7 EL34	0Ω	.1Ω	†88Ω	††68Ω	250K	TP	.1Ω	0Ω	
V5	6CA7 EL34	0Ω	.1Ω	†87Ω	†68Ω	250K	NC	.1Ω	0Ω	
V6	6CA7 EL34	0Ω	.1Ω	†87Ω	†68Ω	250K	TP	.1Ω	0Ω	
V7	6AU6	35K	††220K	.1Ω	.1Ω	†220K	65K	††220K		
V8	6Y6GT	NC	.1Ω	†40Ω	†40Ω	†220K	TP	.1Ω	¶	
V9	5R4GY	NC	¶	TP	31Ω	NC	31Ω	TP	¶	
V10	5R4GY	NC	¶	TP	29Ω	NC	29Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
† MEASURED FROM PIN 8 OF V9.
†† MEASURED FROM PIN 8 OF V8.
NC NO CONNECTION
TP TIE POINT

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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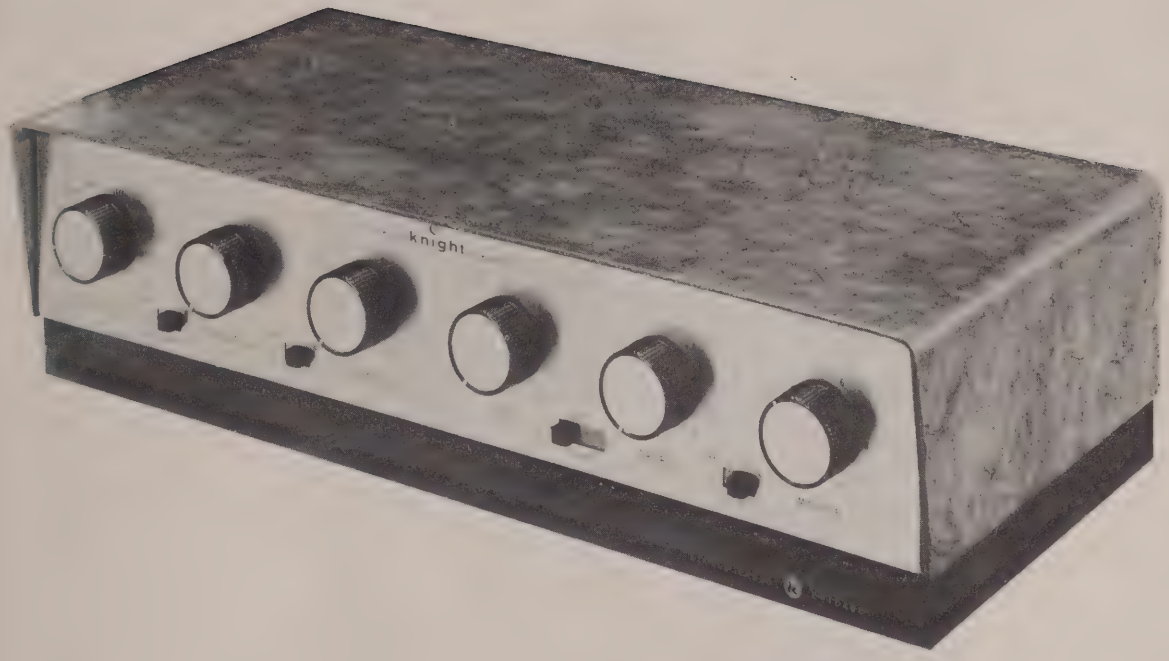
422-9

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

KNIGHT MODEL KN-700 (92SX406)

KNIGHT MODEL
KN-700 (92SX406)



KNIGHT MODEL
KN-700 (92SX406)

TRADE NAME	Knight Model KN-700 (92SX406)
SUPPLIER	Allied Radio Corp., 100 N. Western Avenue, Chicago 80, Illinois
TYPE SET	AC Operated Audio Preamplifier
TUBES (Five)	Types 12AX7 Channel A Preamp., 12AX7 Channel A AF Amp., 12AU7 Channel A AF Amp. - Channel B AF Amp., 12AX7 Channel B Preamp., 12AX7 Channel B AF Amp.
POWER SUPPLY	105-125 Volts AC-50/60 Cycles RATING .30 Amp. @117 Volts AC (18 Watts)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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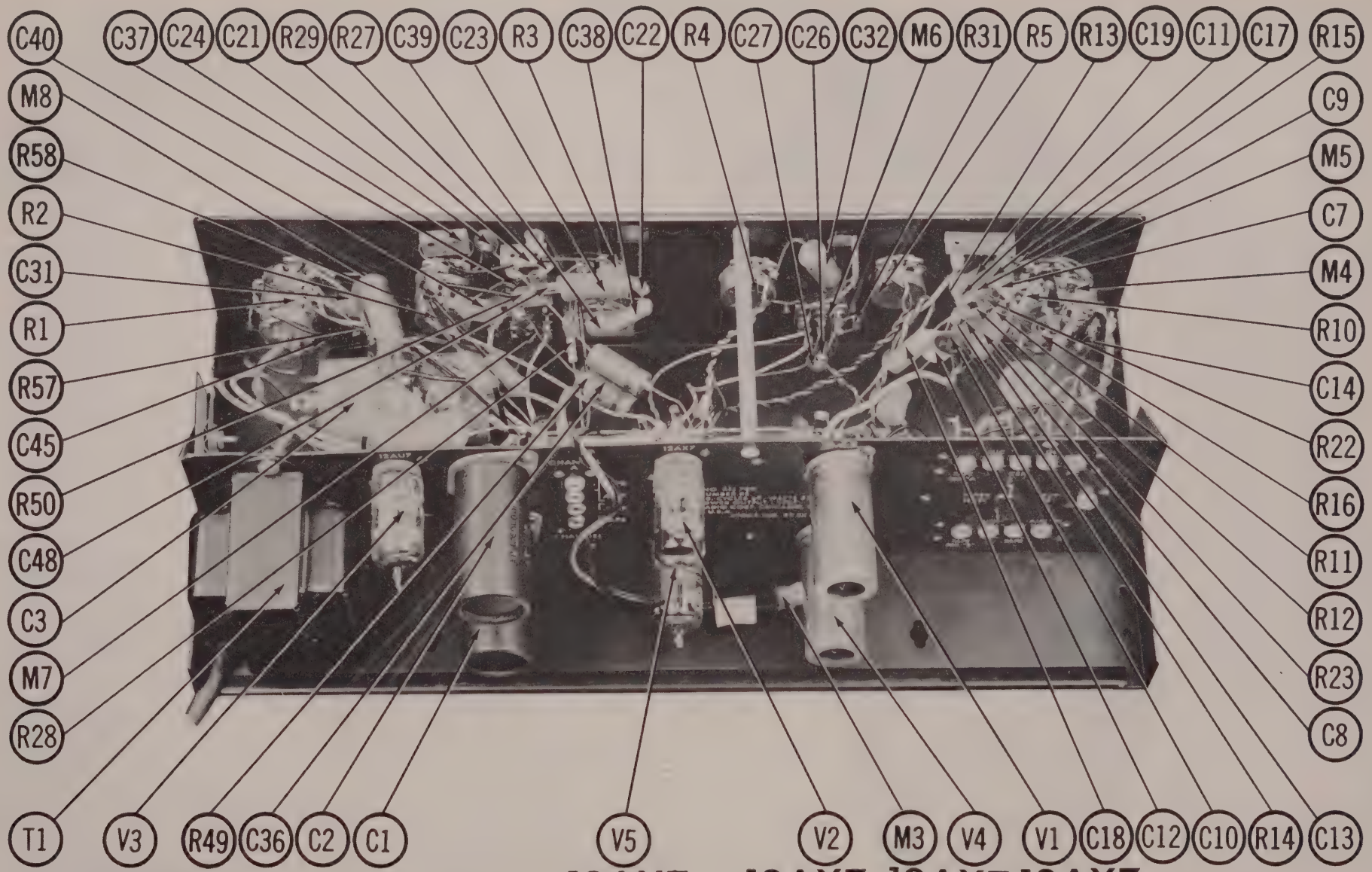
SET 422 FOLDER 10



CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE		TYPE	NOTES
V1	Pre Amp.	Chan "A"	12AX7	
V2	AF Amp.	Chan "A"	12AX7	
V3	AF Amp.	Chan "A" - Chan "B"	12AU7	

ITEM No.	USE		TYPE	NOTES
V4	Pre Amp.	Chan "B"	12AX7	
V5	AF Amp.	Chan "B"	12AX7	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	KNIGHT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■30	150		AFH3-08	XC0071	FP311.2	TMT-7	T-022	TVL-3535
B	▲15	150							
C	15	150							
C2A	■10	150		AFH3-14	C0210	FP330.5	TMT-22	T-105	TVL-3580
B	▲10	150							
C	10	150							
C3	2000	30							R2675 *
C4A	40	25		PRS150V4040	BBRD4415		TDLD-7	MTD-1530	TVA-2445
B	40	25							
C5A	40	25		PRS150V4040	BBRD4415		TDLD-7	MTD-1530	TVA-2445
B	40	25							

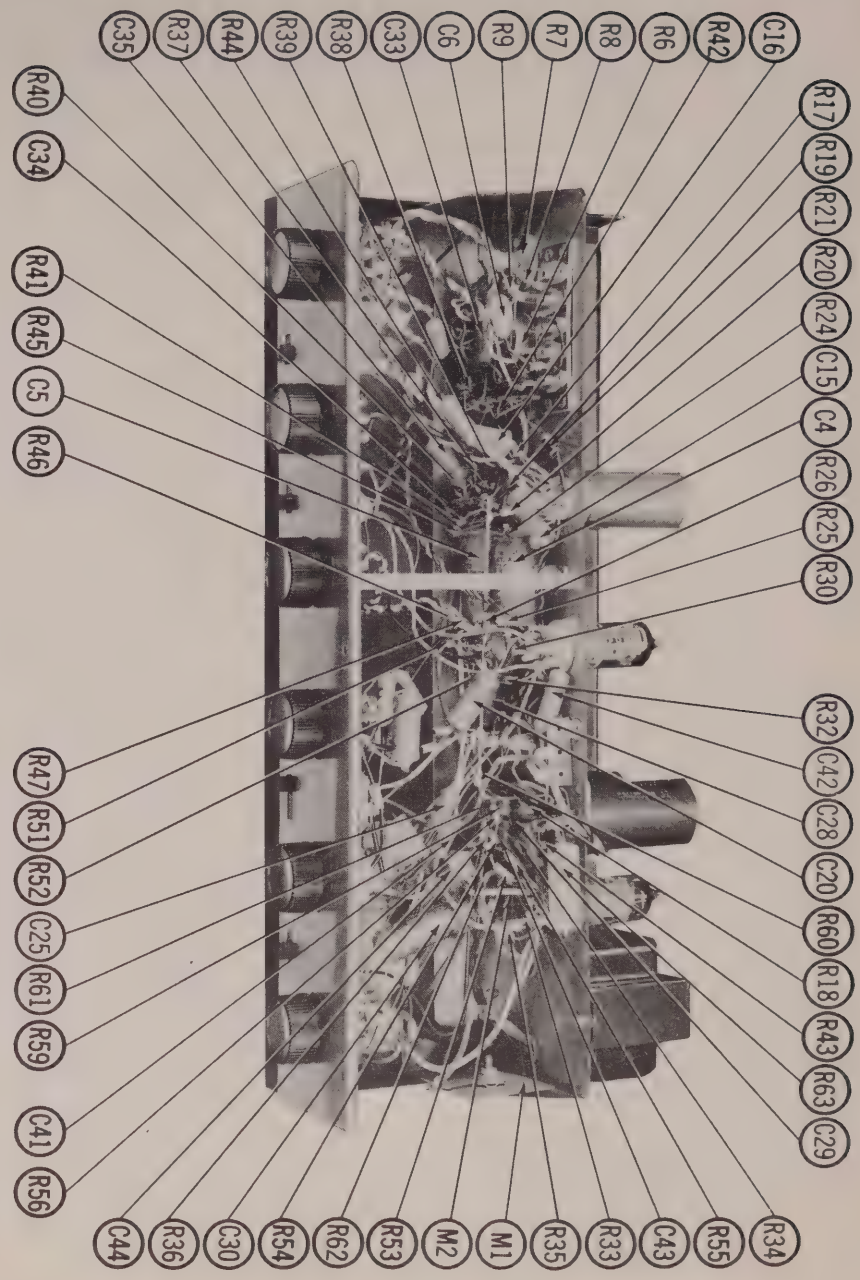
* Non-Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	KNIGHT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	100			NPO-DI100	DTZ-100	C10T1C	ZT-531	5TCC-T1	NPO 10%
C7	270				MD-271	L10T27		5TCC-T27	10%
C8	.01	200		P288N-01	DD-103	CUB4S1	GEM-411	4TM-S1	
C9	560				MD-561				10%
C10	4700								10%
C11	1000								10%
C12	2200								10%
C13	39			1468-000039	DD-390	5W5Q39	ME223	1FM-439	
C14	.022	200		P288N-022	DD-203	CUB4S22	GEM-4122	2TM-S22	
C15	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C16	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C17	.022	200		P288N-022	DD-203	CUB4S22	GEM-4122	2TM-S22	
C18	.022	200		P288N-022	DD-203	CUB4S22	GEM-4122	2TM-S22	
C19	.047	200		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C20	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C21	330				MD-331	L10T33		1FM-333	10%
C22	.0056	200			D6-562				
C23	.056	200					GEM6156		
C24	150			1468-00015	DD-151	5W5T15	MC236	1FM-315	
C25	.0033	600		P688N-0033	D6-332	CUB6D33	GEM-6233	6TM-D33	
C26	330				MD-331	L10T33			10%
C27	330				MD-331	L10T33			10%
C28	.047	200		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C29	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C30	2.0	200							
C31	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C32	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C33	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C34	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C35	.022	200		P288N-022	DD-203	CUB4S22	GEM-4122	2TM-S22	
C36	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C37	330				MD-331	L10T33			10%
C38	.0056	200			D6-562				
C39	.056	200					GEM-6156		
C40	15			1468-000015	DD-150	5W5Q15		1FM-415	
C41	.0033	600		P688N-0033	D6-332	CUB6D33	GEM-6133	6TM-D33	
C42	.047	200		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C43	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C44	2.0	200							
C45	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	KNIGHT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	50K	½	RP-104W-A					Master, Tap ⓐ 5000Ω
B	50K	½						Master, Tap ⓐ 5000Ω
C	Switch							Power On-Off
R2A	500K	½	RP-504E-G	BB-104	AD47-500K-Z	Q13-133		Treble
B	500K	½				M13-133		Treble
R3A	500K	½	RP-504E-G	BB-104	AD47-500K-Z	Q13-133		Bass
B	500K	½				M13-133		Bass
R4A	500K	½	RP-504AE-D	B-60	A47-500K-Z	Q13-133	U48	Volume "B"
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R5A	500K	½	RP-504AE-D	B-60	A47-500K-Z	Q13-133	U48	Volume "A"
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R6A	500K	½	RP-504AF-B	AB-60	A47-500K-Z	B13-133	TA55A	Tuner Level
B	Shaft			AK-1	FKS-1/4	SK3	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		KNIGHT PART No.	NOTES
	OHMS	WATT		
R7	18K			
R8	8200Ω			
R9	39K			
R10	68K			
R11	68K			
R12	68K			
R13	3300Ω			
R14	100K			
R15	100K			
R16	470K			
R17	220K 5%			
R18	4700Ω			
R19	4700Ω 5%			
R20	470K			
R21	100K			
R22	47K			
R23	1.5meg			
R24	1500Ω			
R25	4700Ω			
R26	22K			
R27	47K			
R28	4700Ω			
R29	47K			
R30	220K			
R31	22K			
R32	6800Ω			
R33	470K			
R34	47K			
R35	2200Ω			

ITEM No.	RATING		KNIGHT PART No.	NOTES
	OHMS	WATT		
R36	68K			
R37	100K			
R38	470K			
R39	220K 5%			
R40	4700Ω			
R41	470K			
R42	100K			
R43	4700Ω			
R44	3300Ω			
R45	1500Ω 5%			
R46	4700Ω			
R47	22K			
R48	47K			
R49	4700Ω			
R50	47K			
R51	220K			
R52	6800Ω			
R53	470K			
R54	47K			
R55	2200Ω			
R56	68K			
R57	2200Ω			
R58	2200Ω			
R59	4700Ω			
R60	4700Ω			
R61	4700Ω			
R62	2200Ω			
R63	47Ω	7		

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	KNIGHT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ⓐ .30A	140V ⓐ .031A	22V ⓐ .87A	LP-0264						

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	KNIGHT PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.003A		K17S4	RS050	Model 50	
M2	.425A		304HIEX1		701	

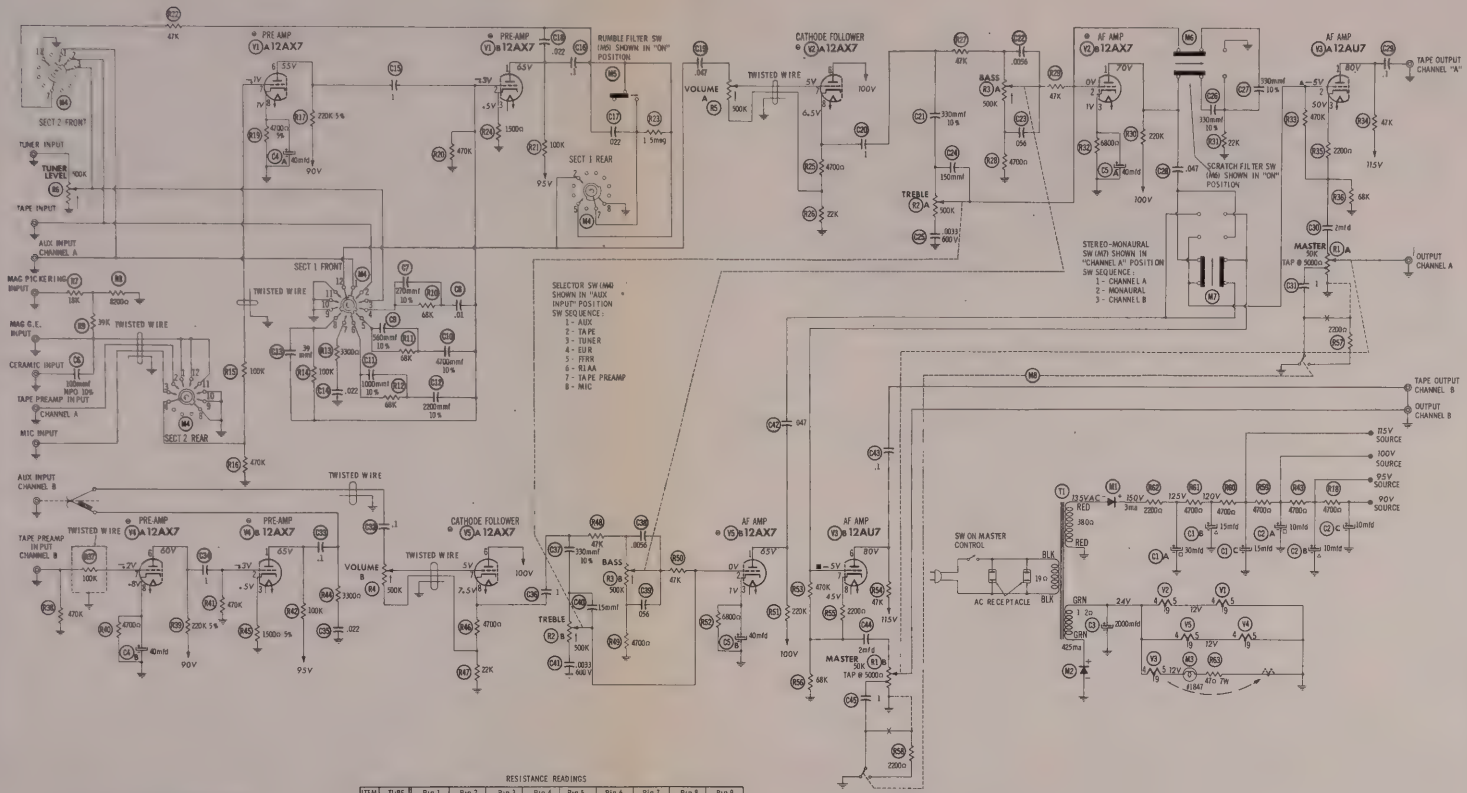
MISCELLANEOUS

ITEM No.	PART NAME	KNIGHT PART No.	NOTES
M3	Lamp		#1847
M4	Switch		Selector, Rotary Wafer Type
M5	Switch		Rumble, Slide Type
M6	Switch		Scratch, Slide Type
M7	Switch		Stereo, Slide Type
M8	Switch		Loudness, Slide Type

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 12AX7	†125K	470K	1500Ω	9.5Ω	0Ω	†245K	100K	4700Ω	6Ω
V2	ECC83 12AX7	†235K	50K	6800Ω	5.5Ω	9Ω	†16K	22K	27K	9.5Ω
V3	12AU7	†60K	540K	70K	5.5Ω	15Ω	†60K	540K	70K	12Ω
V4	ECC83 12AX7	†120K	470K	1500Ω	9.5Ω	0Ω	†250K	570K	4700Ω	6.5Ω
V5	ECC83 12AX7	†240K	52K	6800Ω	5.5Ω	10Ω	†16K	22K	27K	18Ω

† MEASURED FROM OUTPUT OF M1.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PHOTOFACT* Folder

EIA

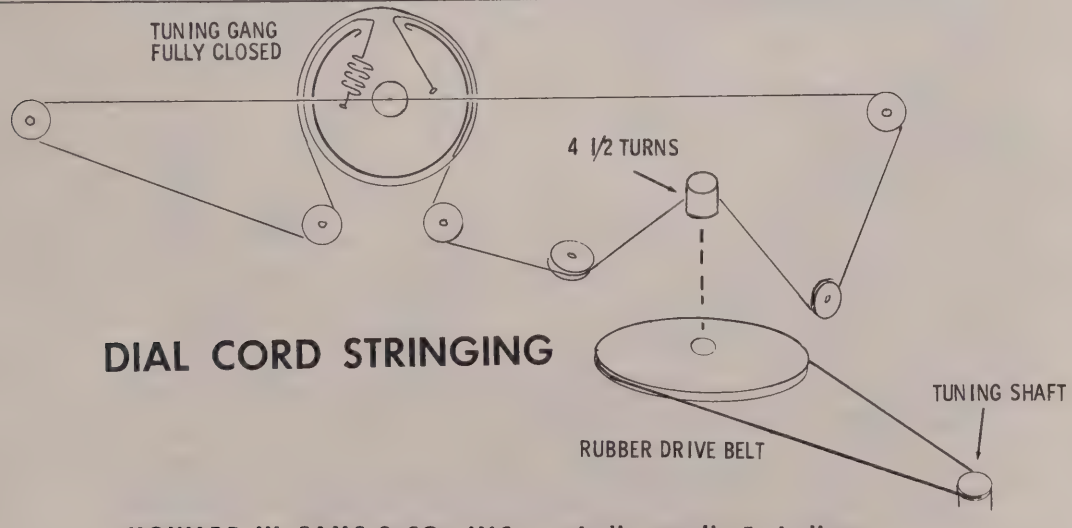
MAGNAVOX
CHASSIS R-50-01AA

MAGNAVOX
CHASSIS R-50-01AA

TRADE NAME	Magnavox Chassis R-50-01AA		
MANUFACTURER	Magnavox Co., 2131 Bueter Road, Fort Wayne 4, Indiana		
TYPE SET	Battery Operated Portable BC-SW Transistorized Receiver		
POWER SUPPLY	9 Volts DC	RATING	13MA @ 9 Volts DC
TUNING RANGES	BROADCAST 535-1620KC SHORT WAVE I 1.7-4.6MC	SHORT WAVE II SHORT WAVE III	4.75-12MC 12.5-22MC

DISASSEMBLY

1. Remove knobs.
2. Turn two screws on cabinet back 90°. Remove back.
3. Remove battery.
4. Unscrew top of telescoping antenna. Unplug antenna. Remove antenna mounting screw from bottom of cabinet. Remove antenna.
5. Remove four chassis mounting screws, two from bottom of cabinet, and two from the top corners of cabinet.
6. Remove chassis.



DIAL CORD STRINGING

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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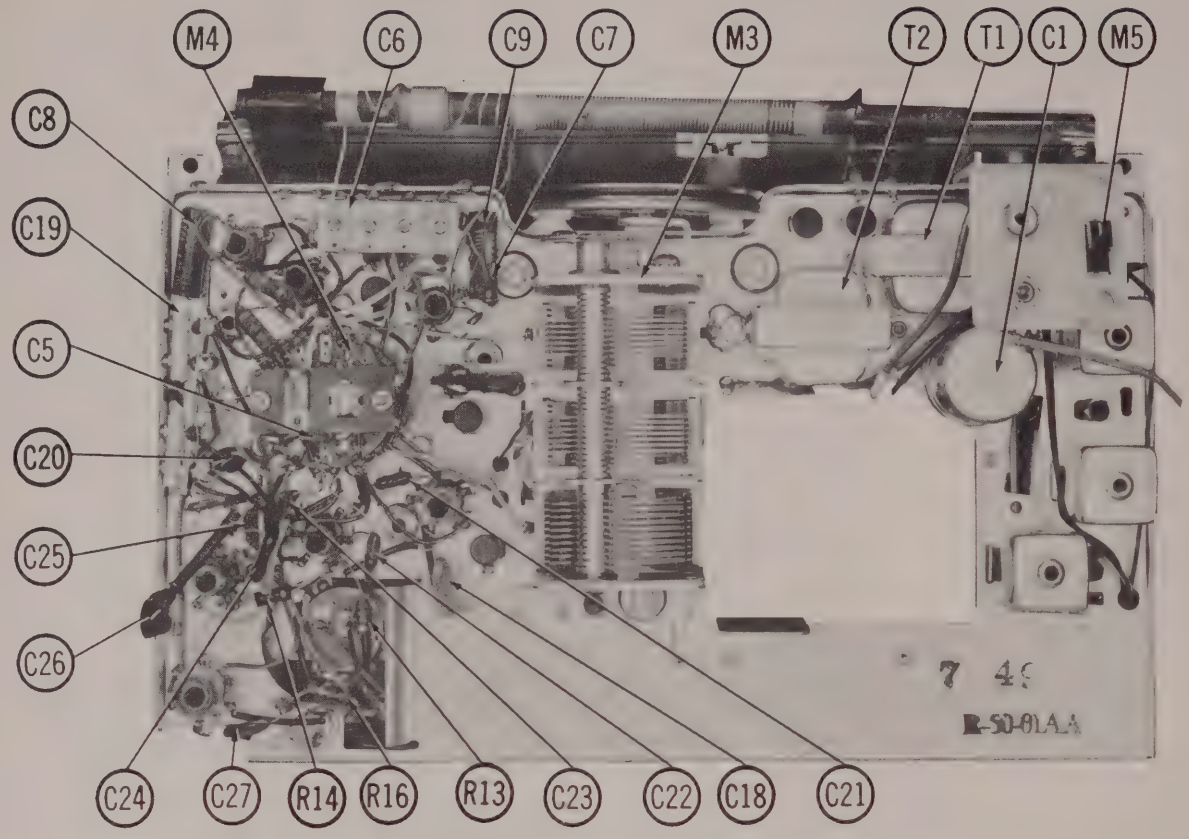
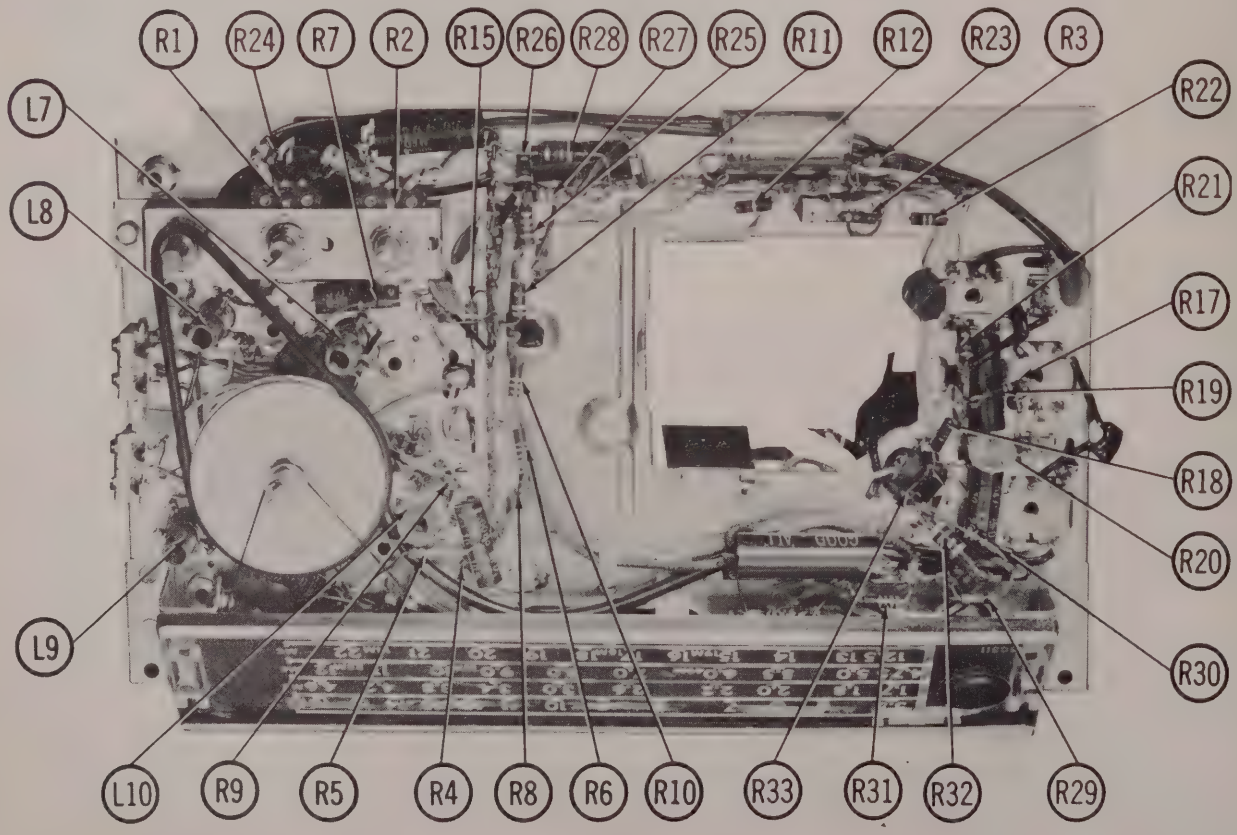
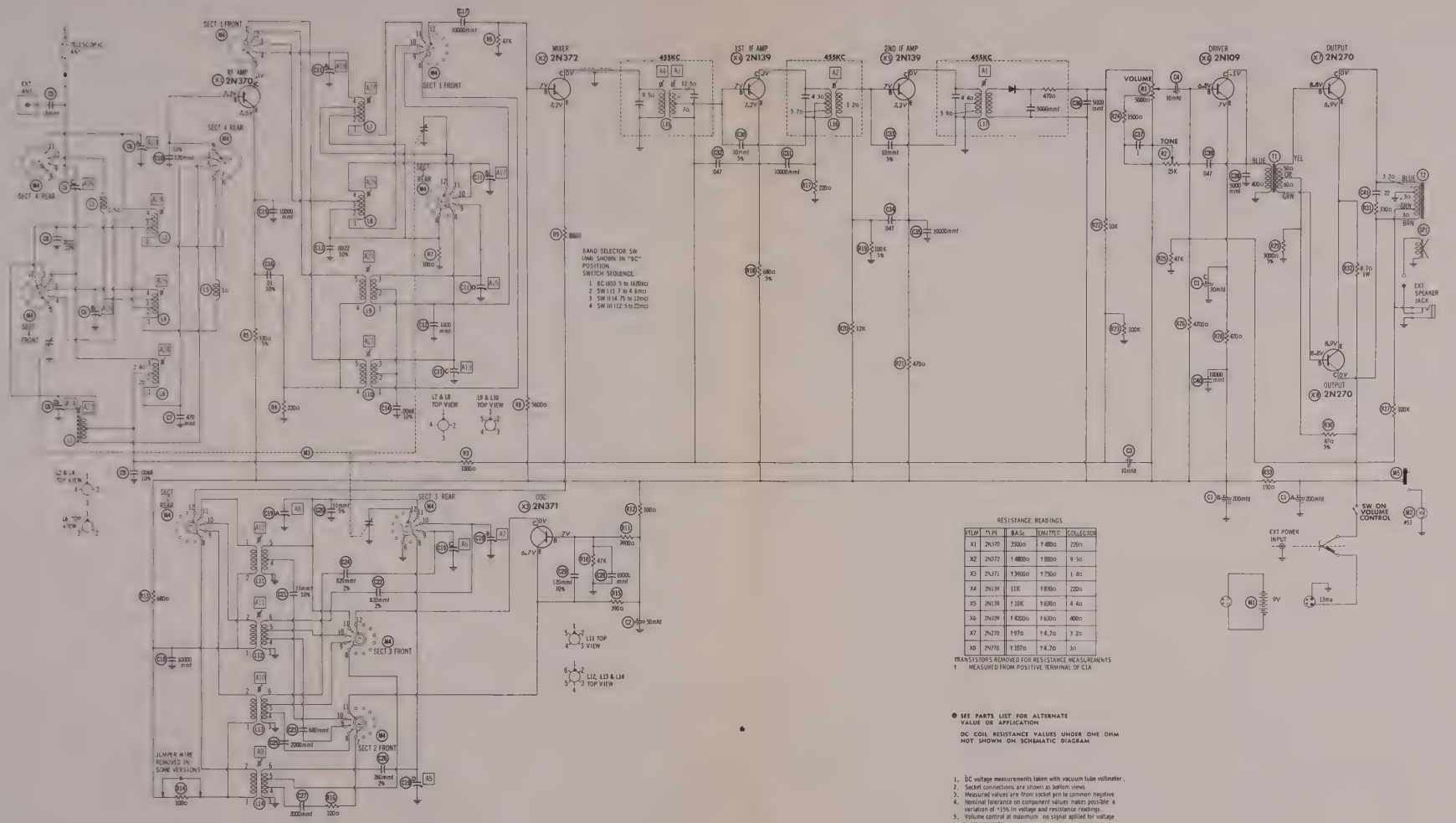


CHASSIS TOP VIEW - CAPACITOR, RESISTOR & MISC. IDENT.



CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.



RESISTANCE READINGS

ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1	2N370	3500Ω	†480Ω	220Ω
X2	2N372	†4800Ω	†880Ω	9 5Ω
X3	2N371	†3900Ω	†750Ω	1 4Ω
X4	2N139	11K	†830Ω	220Ω
X5	2N139	†10K	†630Ω	4 4Ω
X6	2N109	†4200Ω	†630Ω	400Ω
X7	2N270	†97Ω	†4.7Ω	3 2Ω
X8	2N270	†105Ω	†4.7Ω	3Ω

TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS
† MEASURED FROM POSITIVE TERMINAL OF C1A

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum no signal applied for voltage measurements

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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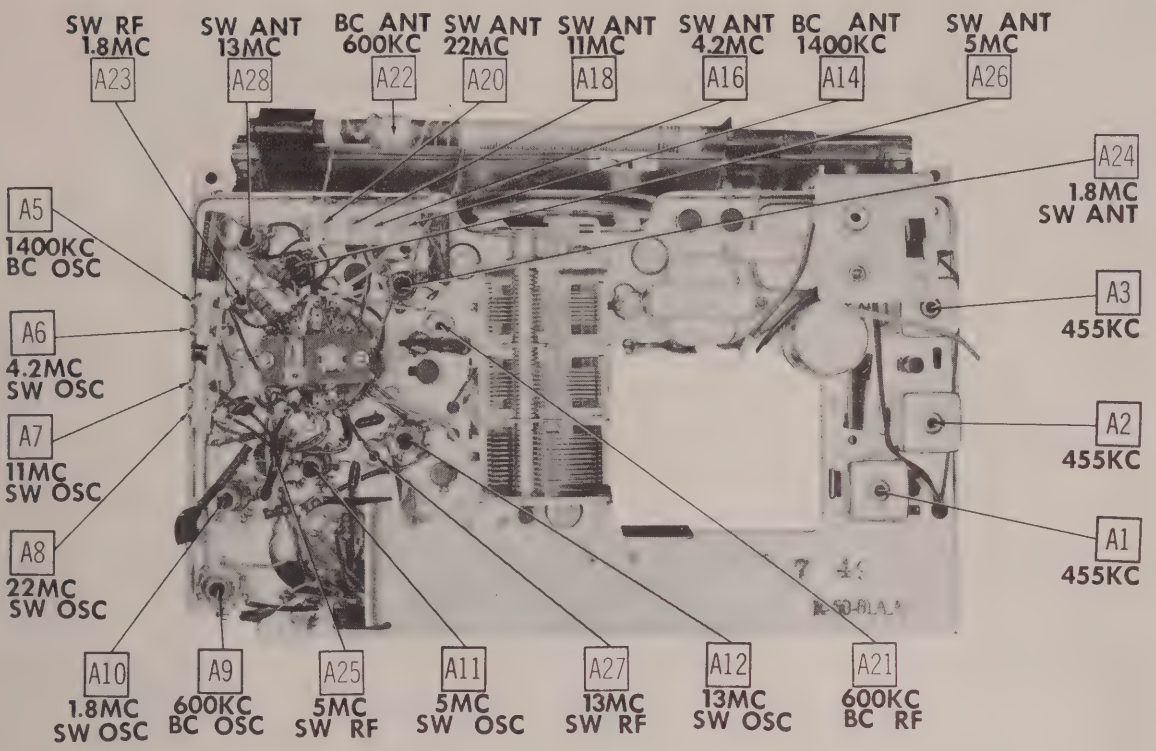
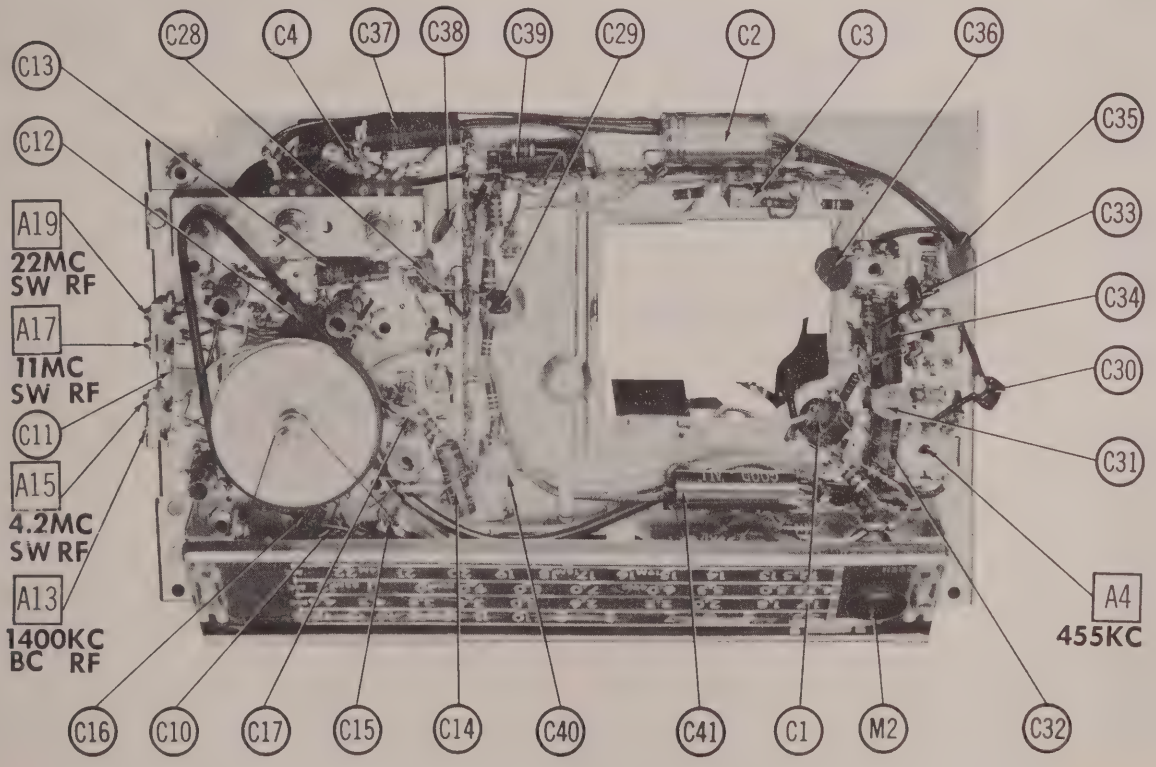


CHASSIS TOP VIEW - ALIGNMENT IDENT.



CHASSIS BOTTOM VIEW - ALIGN., CAPACITOR & MISC. IDENT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.
Check condition of batteries before attempting alignment. If necessary replace with new batteries.

IF ALIGNMENT

Attenuate signal generator to maintain .1 volt peak to peak amplitude on scope.
Two peaks may be found when adjusting the coil slugs.
The correct peak is the first peak "In" starting with the slug at fully "Out".
Fabricate alignment tool by tapering a square bakelite rod almost to a point. Point should measure .060" square. Set volume control to minimum.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1.	.01mfd & 10K Carbon Resistor in series	High side to base of X4. Low side to chassis.	455KC (400~ Mod.)	B	Tuning gang fully open	Vert. Amp. to high side of R1. Low side to chassis.	A1, A2, A3	Adjust for maximum amplitude of 400~ signal.
2.	"	"	"	"	"	"	A4	Adjust for MINIMUM amplitude.

RF ALIGNMENT

Disconnect Rod antenna.
After each oscillator adjustment, (steps 3 thru 10), tune signal generator 910KC higher and check for image.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
3.		High side to ext. antenna terminal. Low side to chassis.	1400KC (400~ Mod.)	B	1400KC	Vert. Amp. to high side of R1. Low side to chassis.	A5	Adjust for maximum amplitude of 400~ signal.
4.		"	4.2MC	1	4.2MC	"	A6	"
5.		"	11MC	2	11MC	"	A7	"
6.		"	22MC	3	22MC	"	A8	"
7.		"	600KC	B	600KC	"	A9	"
8.		"	1.8MC	1	1.8MC	"	A10	"
9.		"	5MC	2	5MC	"	A11	"
10.		"	13MC	3	13MC	"	A12	"
	Repeat steps 3 thru 10 until no further improvement can be obtained.							
11.		High side to ext. antenna terminal. Low side to chassis.	1400KC (1MC Swp.)	B	1400KC	Vert. Amp. to high side of R1. Low side to chassis.	A13, A14	Adjust for maximum amplitude of response curve similar to Fig. 1.
12.		"	4.2MC	1	4.2MC	"	A15, A16	"
13.		"	11MC	2	11MC	"	A17, A18	"
14.		"	22MC	3	22MC	"	A19, A20	"
15.		High side to antenna screw type terminal. Low side to chassis.	600KC (1MC Swp.)	B	600KC	Vert. Amp. to high side of R1. Low side to chassis.	A21, A22	Adjust for maximum amplitude. (See Fig. 1.)
16.		"	1.8MC	1	1.8MC	"	A23, A24	"
17.		"	5MC	2	5MC	"	A25, A26	"
18.		"	13MC	3	13MC	"	A27, A28	"

ALTERNATE RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
11.		High side to ext. antenna terminal. Low side to chassis.	1400KC (400~ Mod.)	B	1400KC	Vert. Amp. to high side of R1. Low side to chassis.	A13, A14	Adjust for maximum amplitude while rocking signal generator thru signal.
12.		"	4.2MC	1	4.2MC	"	A15, A16	"
13.		"	11MC	2	11MC	"	A17, A18	"
14.		"	22MC	3	22MC	"	A19, A20	"
15.		"	600KC	B	600KC	"	A21, A22	"
16.		"	1.8MC	1	1.8MC	"	A23, A24	"
17.		"	5MC	2	5MC	"	A25, A26	"
18.		"	13MC	3	13MC	"	A27, A28	"

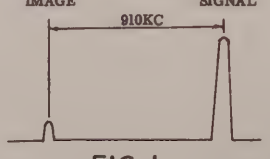


FIG. 1

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N370	RF Amplifier		2N370		2N370	
X2	2N372	Mixer		2N372		2N372	
X3	2N371	Oscillator		2N371		2N371	
X4	2N139	1st IF Amplifier		2N139	2N483		
X5	2N139	2nd IF Amplifier		2N139	2N483		
X6	2N109	Driver		2N109	2N632		
X7	2N270	Output	CBS2N180	2N270	2N361	2N270	
X8	2N270	Output	CBS2N180	2N270	2N361	2N270	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MAGNAVOX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲200	10	270023-29						R2678 *
B	■200	10							
C	30	10							
C2	50	10	270027-31	PRS25V50	BBR50-25	TC29	TD-50-25	MT-0250	TVA-1206
C3	10	15	270559-8	XPP-15010	NL10-15	TT15X10	ML10-15		TE-1155
C4	10	15	270559-8	XPP-15010	NL10-15	TT15X10	ML10-15		TE-1155

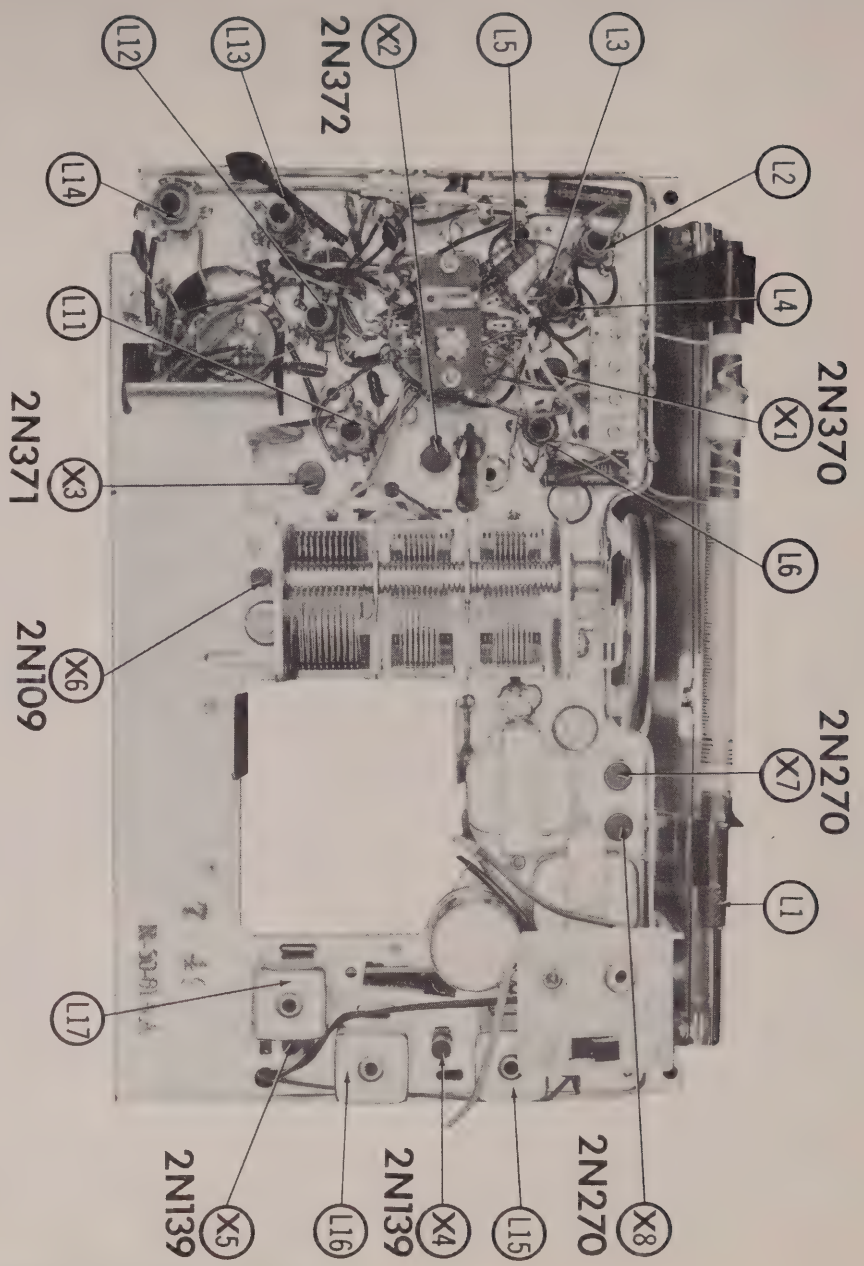
* Non-Catalog Item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	MAGNAVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	15		250218-29	BPD-000015	DD-150	L10Q15	UC-5415	5GA-Q15	
C6A									
B			260142-1						
C									
D									
C7	470		250218-6	BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47	
C8	.0022	100	250261-105						10%
C9	.0068	100	250261-111				GEM-16268		10%
C10	120		250224-432	1469-00012	DD-121	22R5T12		MS-312	10%
C11A									
B			260143-1						
C									
D									
C12	1000		250218-28	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C13	.0022	100	250261-105						10%
C14	.0068	100	250261-111				GEM-16268		10%
C15	10000		250218-19	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C16	.01	100	250218-19				GEM-1611		10%
C17	10000		250218-19	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C18	10000		250218-19	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C19A									
B			260143-1						
C									
D									
C20	51		250218-16	1469-000051		22R5Q51		MS-451	5%
C21	33		250224-418	1469-000033	DD-330	22R5Q33		MS-433	10%
C22	820		250226-358						2%
C23	680		250175-61	BPD-00068	DD-681	BYA10T68	UC-5368	5GA-T68	
C24	820		250226-152						2%
C25	2000		250218-16	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C26	260		250226-169						2%
C27	2000		250218-16	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C28	10000		250218-19	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C29	120		250224-432	1469-00012	DD-121	22R5T12		MS-312	10%
C30	10		250224-309	1469-00001		22R5Q1	MCE215	MS-41	5%

CHASSIS—TOP VIEW



MAGNAVOX
CHASSIS R-50-01AA

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA MAGNAVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C31	10000		250218-19	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C32	.047	100	250261-21	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C33	10		250224-309	1469-00001		22R5Q1	MCE215	MS-41	5%
C34	.047	100	250261-21	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C35	10000		250218-19	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C36	5000		250175-30	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C37	.1	100	250261-25	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C38	5000		250175-30	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C39	.047	100	250261-21	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C40	10000		250218-19	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C41	.22	100	250261-29	P288N-22		CUB2P22	GEM-2022	2TM-P22	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MAGNAVOX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A B	5000Ω Switch	½	220074-13					Volume, Tap @ 2000Ω Power On-Off Tone
R2A B	25K Shaft	½	220126-67	B-26 Not Req.	A47-25K-S FS-3	Q11-120 Not Req.	U29 Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	MAGNAVOX PART No.	NOTES
R3	1000Ω		230104-62	
R4	220Ω		230104-54	
R5	330Ω 5%		230094-147	
R6	47K		230104-82	
R7	100Ω		230104-50	
R8	5600Ω		230104-71	
R9	100Ω		230104-50	
R10	47K		230104-82	
R11	3900Ω		230104-69	
R12	100Ω		230104-50	
R13	680Ω		230104-60	
R14	100Ω		230104-50	
R15	390Ω		230104-57	
R16	100Ω		230104-50	
R17	220Ω		230104-54	
R18	680Ω 5%		230094-155	

ITEM No.	RATING OHMS	RATING WATT	MAGNAVOX PART No.	NOTES
R19	100K 5%		230094-207	
R20	12K		230104-75	
R21	470Ω		230104-58	
R22	10K		230104-74	
R23	100K		230104-86	
R24	1500Ω		230104-64	
R25	47K		230104-82	
R26	4700Ω		230104-70	
R27	100K		230104-86	
R28	470Ω		230104-58	
R29	3000Ω 5%		230094-170	
R30	47Ω 5%		230094-127	
R31	330Ω		230104-56	
R32	4.7Ω	1	230107-1	
R33	150Ω		230104-52	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA MAGNAVOX PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loop Stick	360725-1					
L2	SW Ant. Coil	360724-1					
L3	RF Choke	360601-9	19-1000	BC-561	4602		1 Microhenry
L4	SW Ant. Coil	360723-1					
L5	RF Choke	360601-10	19-1007	BC-560	4590		.68 Microhenry
L6	SW Ant. Coil	360722-1					
L7	SW RF Coil	360721-1					
L8	SW RF Coil	360735-1					
L9	SW RF Coil	360734-1					
L10	BC RF Coil	360733-1					
L11	SW Osc. Coil	360732-1					
L12	SW Osc. Coil	360731-1					
L13	SW Osc. Coil	360730-1					
L14	BC Osc. Coil	360729-1					
L15	1st IF	360726-1					
L16	2nd IF	360727-1					
L17	3rd IF	360728-1					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO PRI.	TURNS RATIO SEC.	REPLACEMENT DATA MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	1.5	: 1	320282-1							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	REPLACEMENT DATA MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	207Ω CT, 3-4Ω Tap from CT	320283-1							

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA MAGNAVOX PART No.	QUAM PART No.	NOTES
SP1	5" X 7"	PM	3-4Ω	583869-1	57A21	

BATTERIES

ITEM No.	VOLTAGE	MAGNAVOX PART No.	BURGESS "A"	BURGESS "B"	EVEREADY "A"	EVEREADY "B"	MALLORY "A"	MALLORY "B"	NOTES
M1	9V			D6P1		2506			

MISCELLANEOUS

ITEM No.	PART NAME	MAGNAVOX PART No.	NOTES
M2	Lamp		#53 (Alternate Type #23, Part #180161-18)
M3	Tuning Cap.	260141-1	3 Gang (Ant. 10-250mmf, RF 8-235mmf, Osc. 8-235mmf)
M4	Switch	160281-1	Band, Rotary Wafer Type
M5	Switch	160280-1	Pilot Lamp, Slide Type, Spring Return

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	140270-2	Tan, Tuning
Knob	140270-3	Black, Tuning
Knob	140271-6	Tan, Fine Tuning
Knob	140271-9	Black, Fine Tuning
Knob	140269-2	Tan, Band Selector
Knob	140269-3	Black, Band Selector
Knob	140271-5	Tan, On-Off-Volume
Knob	140271-8	Black, On-Off-Volume
Knob	140271-4	Tan, Tone
Knob	140271-7	Black, Tone
Dial Pointer	635723-1	
Dial Scale	150511-1	
Dial Glass	441911-1	
Handle	120580-2	Tan
Handle	120580-1	Black
Antenna	700632-1	Telescoping

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

PHOTOFACT* Folder

RCA VICTOR MODELS 1BX57, 1BX59, 1BX62, 1BX64, 1BX67, 1BX78, 1BX79 (Ch. RC-1183, A, B)

RCA VICTOR MODELS 1BX57, 1BX59, 1BX62, 1BX64, 1BX67, 1BX78, 1BX79 (Ch. RC-1183, A, B)

MODEL 1-BX-57

TRADE NAME	RCA Victor Models 1BX57, 1BX59 (Ch. RC-1183), 1BX62, 1BX64, 1BX67 (Ch. RC-1183A), 1BX78, 1BX79
MANUFACTURER	RCA Victor Radio & "Victrola" Div., Radio Corp. of America, Camden 8, N.J. (Ch. RC-1183B)
TYPE SET	Three Power Portable AM Receiver
TUBES (Four)	Types 1R5 Converter, 1U4 IF Amplifier, 1U5 Det.-AVC-AF Amp., 3V4 Output
POWER SUPPLY	110-120 Volts AC (or) 7.5 Volts DC "A" Supply & 90 Volts DC "B" Supply
RATING	.15 Amp. @ 117 Volts AC (10 Watts) or 50MA @ 7.5 Volts DC & 12MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1mfd capacitor in series with low side of the signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 6 (grid) of 1U4 (V2). Low side to B-.	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200mmf to reduce hum modulation.
2.	"	High side to antenna stator lug of tuning gang. Low side to B-.	"	"	"	A3, A4	"
3.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	1400KC	Tune to 1400KC signal	"	A6	"
5.		"	600KC	600KC	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output while rocking tuning gang. Repeat steps 3, 4 and 5.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H693

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	1R5	
V2	IF Amplifier	1U4	
V3	Det.-AVC-AF Amp.	1U5	
V4	Output	3V4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	150	105945	PR4-220		WQ215			R1378 *
B	20	150							
C	20	150							
D	100	25							

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	10000		73960	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C3	56		101232	SI 56	D6-560	LT6Q56	UC-5456	5GA-Q56	
C4	.033	400	73552	P488N-033	DF-303	CUB4S33	GEM-4133	4TM-S33	
C5	.0033	200	102425A	P288N-0033	D6-332	CUB6D33	GEM-6233	6TM-D33	
C6	3		101233						10%
C7	.0022	200	77446	P288N-0022	D6-222	CUB6D22	GEM-6222	6TM-D22	
C8	.22	200	79740	P288N-22		CUB2P22	GEM-2022	2TM-P22	Note 1
C9	10000		79918	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C10	.22	200	79740	P288N-22		CUB2P22	GEM-2022	2TM-P22	
C11	.1	400	77423	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	

Note 1. Used in Ch. RC-1183 only.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	RCA Victor PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	½	105938					Volume
B	Switch							

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		RCA Victor PART No.	NOTES
	OHMS	WATT		
R2	15K		502315	
R3	100K		502410	
R4	4.7meg		502547	
R5	56K		502356	
R6	4.7meg		502547	
R7	3300Ω		502233	
R8	1200Ω 5%	4(WW)	101881	
R9	1200Ω 5%	4(WW)	101881	
R10	68Ω	(WW)	105927	Fuse Type
R11	2200Ω		502222	
R12	820Ω		502182	
R13	1000Ω		502210	
R14	470Ω		502147	

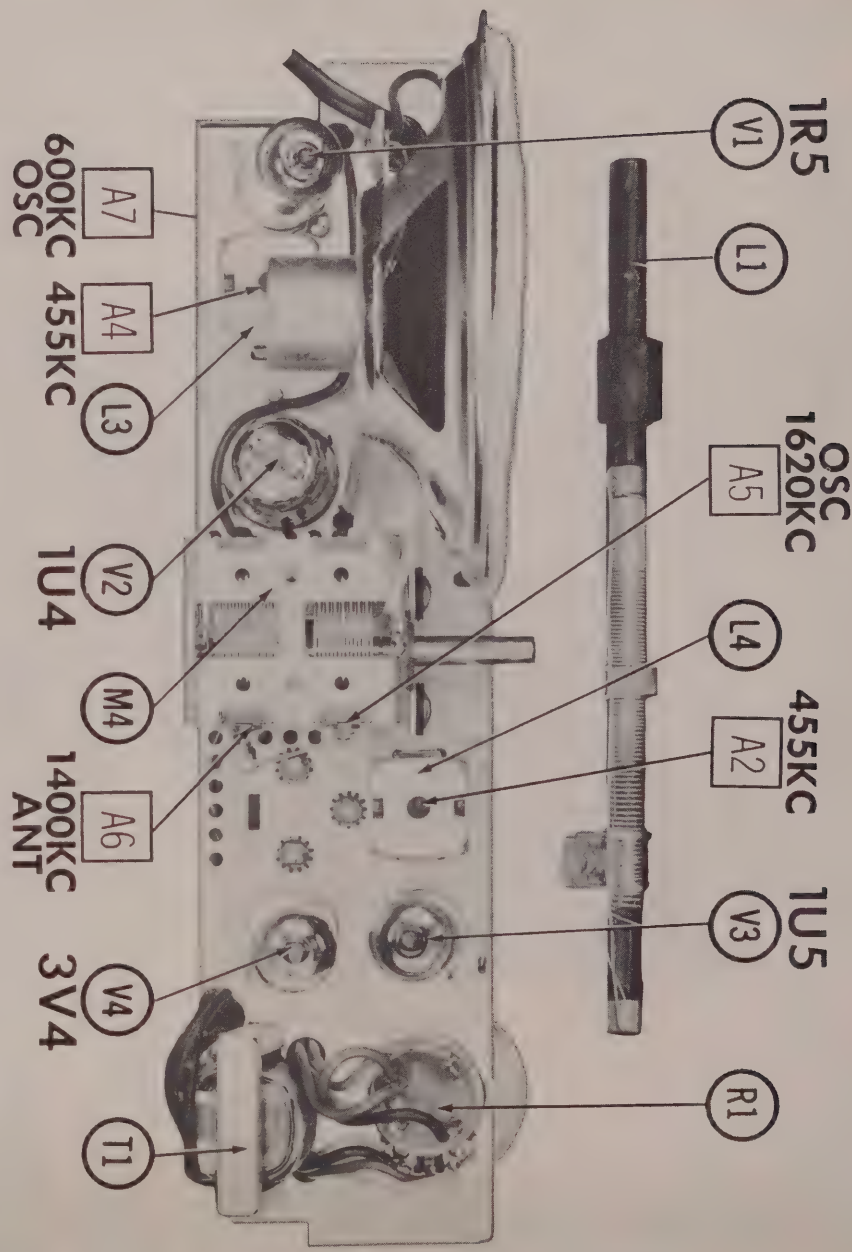
COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		RCA Victor PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Stick	105937					Models 1BX57, 1BX59
	Loop Stick	105951					Includes Case Ass'y. Models 1BX62, 1BX64, 1BX67, 1BX78, 1BX79
L2	Osc. Coil	105935		BC-401 ▲			
L3	Input IF	105933					
L4	Output IF	105934	16-6758 *	BC-353 *	12-C8 *	RF-2 *	Includes 125mmf cap.

▲ Disregard capacity winding.

* Connect 125mmf cap. externally.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	9000Ω	3-4Ω	105926		A-2998 ①		A-3329 ①	24S83 ①	S-11X ①	① Use original channel frame.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	RCA Victor PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	79696A	4A07	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	RCA Victor PART No.	REPLACEMENT DATA
K1	Audio Couplate	68mmf, 2500mmf, 5000mmf, 4700mmf, 68mmf, 1meg, 4.7meg, 3.3meg, 10meg	105936	

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	RCA Victor PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.055A	77292	1234AH	T065	65 K200 ①	① Silicon Type

BATTERIES

ITEM No.	VOLTAGE	RCA Victor PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M2	7.5V	VS065	C5		717		M9		
M3	90V	VS219		P60		479		M214	

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M4	Tuning Cap.	105946	Ch. RC-1183, 2 Gang (Ant. 11.4-256mmf, Osc. 10-99mmf)
	Tuning Cap.	105954	Ch. RC-1183A, 2 Gang
	Tuning Cap.	105955	Ch. RC-1183B, 2 Gang
M5	Switch	101882	Includes Bracket, AC-DC-Battery, Rotary, Wafer Type

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

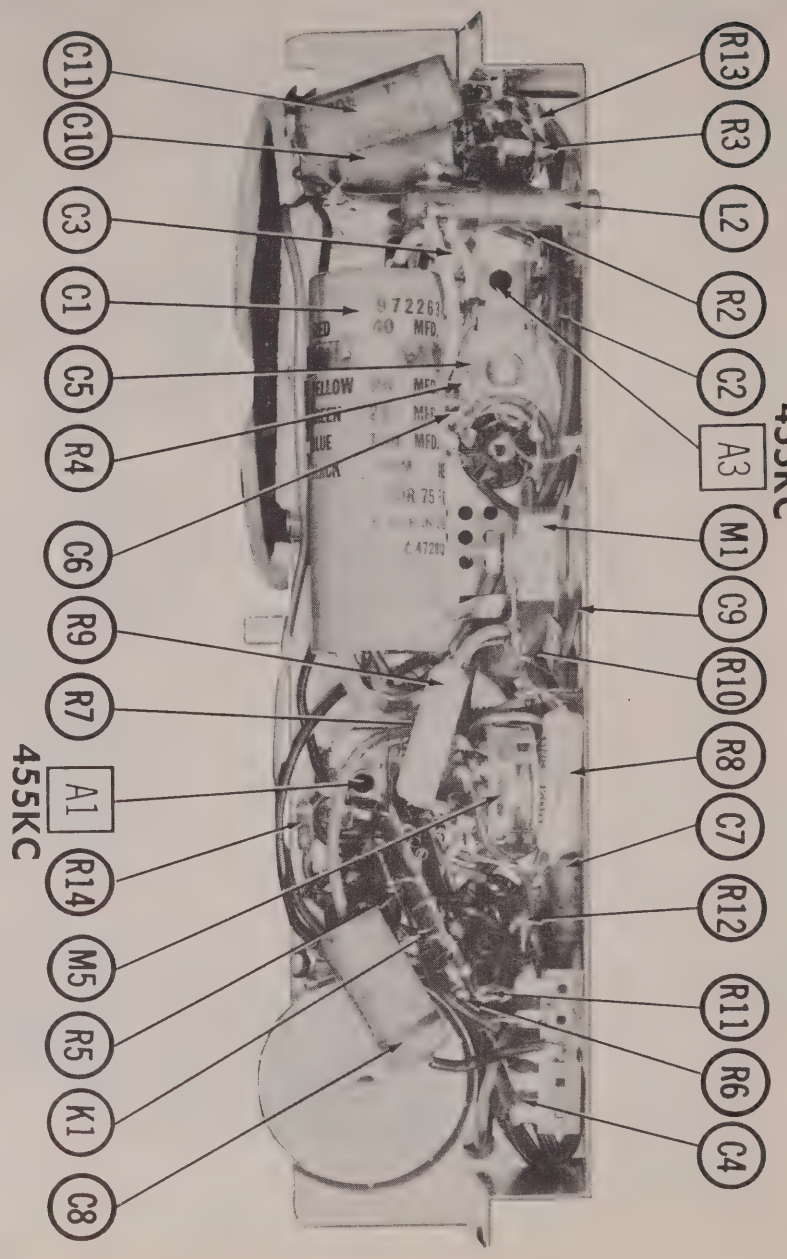
NAME	PART NO.	DESCRIPTION
Knob	105939	Tuning, Antique White, Models 1BX57, 1BX59
Knob	105931	Tuning, Antique White, Models 1BX62, 1BX64, 1BX67
Knob	105932	Vernier Tuning, Tawny Beige, Models 1BX78, 1BX79
Knob	105928	On-Off-Volume, Antique White, Models 1BX57, 1BX59, 1BX62, 1BX64, 1BX67
Knob	105929	On-Off-Volume, Tawny Beige, Models 1BX78, 1BX79
Tuning Indicator	105930	Flame Red, Models 1BX78, 1BX79
Tuning Dial	105953	With Calibrations, Models 1BX62, 1BX64, 1BX67
Handle	105949	Antique White, Models 1BX57, 1BX59
Handle	105950	Antique White, Models 1BX62, 1BX64, 1BX67, 1BX78, 1BX79

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

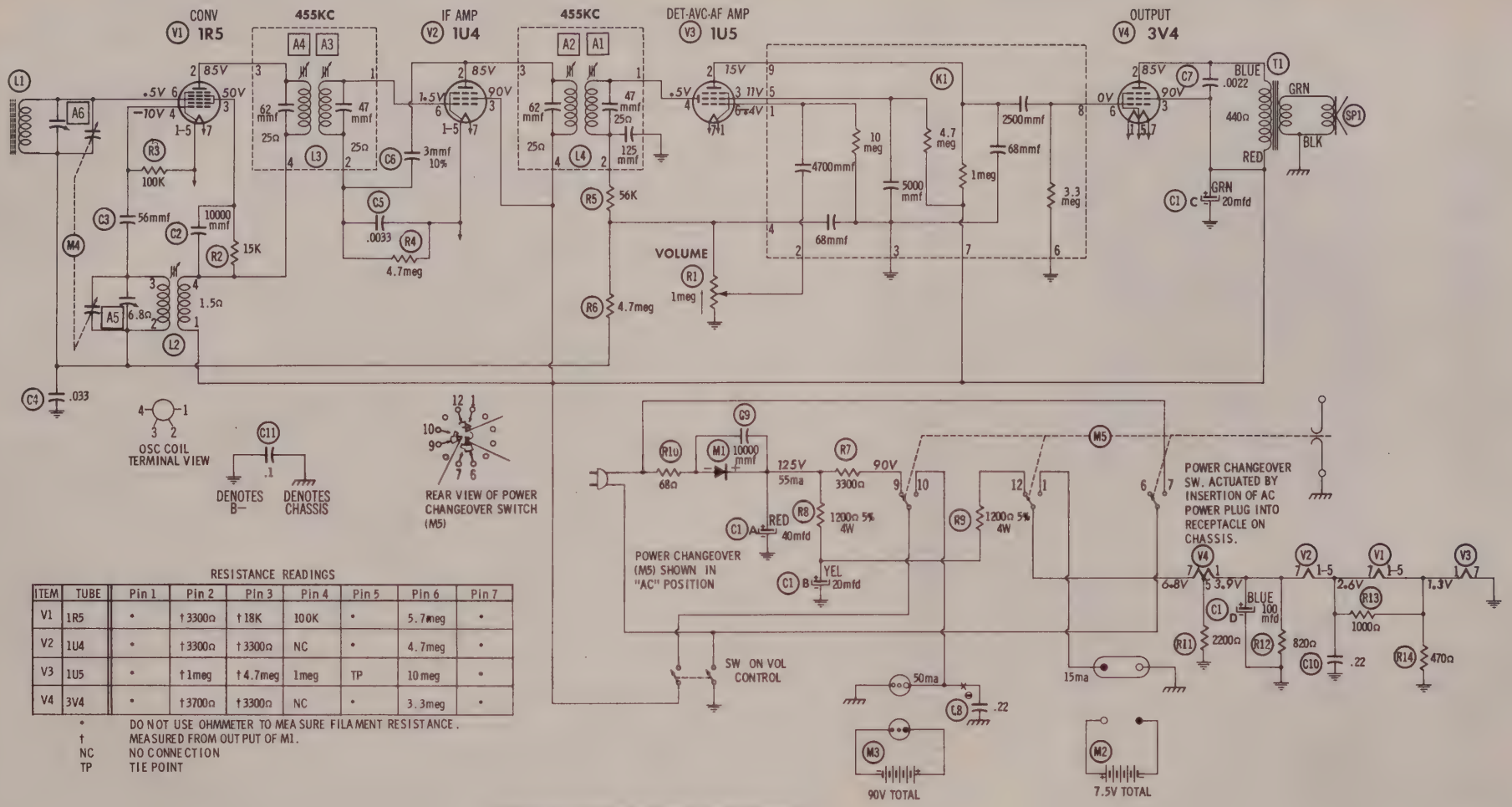
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—BOTTOM VIEW



RCA VICTOR MODELS 1BX57, 1BX59, 1BX62, 1BX64, 1BX67, 1BX78, 1BX79 (Ch. RC-1183, A, B)

RCA VICTOR MODELS 1BX57, 1BX59, 1BX62, 1BX64, 1BX67, 1BX78, 1BX79 (Ch. RC-1183, A, B)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	1R5	•	†3300Ω	†18K	100K	•	5.7meg	•
V2	1U4	•	†3300Ω	†3300Ω	NC	•	4.7meg	•
V3	1U5	•	†1meg	†4.7meg	1meg	TP	10 meg	•
V4	3V4	•	†3700Ω	†3300Ω	NC	•	3.3meg	•

• DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PHOTOFACT* Folder

with CIRCUITRACE*

REGENCY MODELS HFT-1A, HFT-1K

REGENCY MODELS
HFT-1A, HFT-1K

MODEL HFT-1A

REGENCY MODELS
HFT-1A, HFT-1K

TRADE NAME	Regency Models HFT-1A, HFT-1K		
MANUFACTURER	Regency Div., I.D.E.A., Inc., 7900 Pendleton Pike, Indianapolis 26, Indiana		
TYPE SET	Battery Operated 4 Channel Preamplifier Equalizer		
POWER SUPPLY	18 Volts DC	RATING	1.4MA @ 9 volts DC (or) 2.8MA @ 18 volts DC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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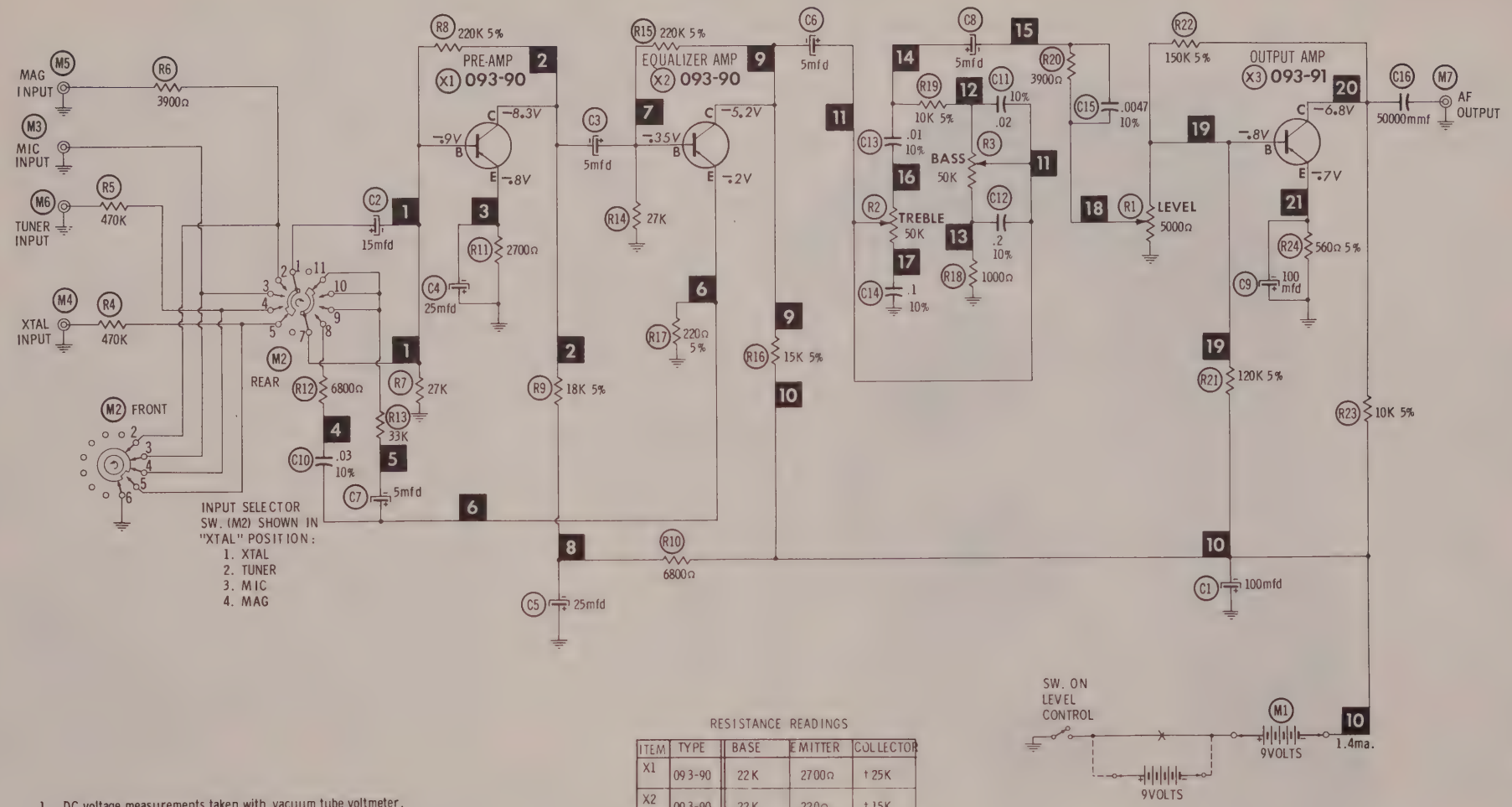
H634

SET 422 FOLDER 13



RESISTANCE READINGS

ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1	093-90	22K	2700Ω	†25K
X2	093-90	22K	220Ω	†15K
X3	093-91	5000Ω	560Ω	†9000Ω

TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS.
† MEASURED FROM NEGATIVE TERMINAL OF C1

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
3. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE*
*TRADE MARK

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PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	Mfg. Part No.	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	093-90	Preamplifier		2N109	2N422		PNP
X2	093-90	Equalizer Amplifier		2N109	2N466		PNP
X3	093-91	Output Amplifier		2N109	2N466		PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	REGENCY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	100	18	093-78	PRS25V100	BBR100-25	TC2501	ML100-25	MTH-2510	TVA-1207
C2	15	25	093-81	PWE25015	NL15-25	TT25X15	ML15-25	MQ-0320	TE-1205
C3	5	20	093-80	PRS50V5	BBR5-50	TC30	TD-5-25	MQ-1504	TVA-1203
C4	25	20	093-79	PRS25V25	BBR25-25	TC26	TD-25-25	MQ-0225	TVA-1205
C5	25	20	093-79	PRS25V25	BBR25-25	TC26	TD-25-25	MQ-0225	TVA-1205
C6	5	20	093-80	PRS50V5	BBR5-50	TC30	TD-5-25	MQ-1504	TVA-1203
C7	5	20	093-80	PRS50V5	BBR5-50	TC30	TD-5-25	MQ-1504	TVA-1203
C8	5	20	093-80	PRS50V5	BBR5-50	TC30	TD-5-25	MQ-1504	TVA-1203
C9	100	18	093-78	PRS25V100	BBR100-25	TC2501	ML100-25	MTH-2510	TVA-1207

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	REGENCY PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C10	.03	100	093-88				GEM-1613		10%
C11	.02	100	093-82				GEM-1612		10%
C12	.2	100	093-83				GEM-402		10%
C13	.01	100	093-86				GEM-411		10%
C14	.1	100	093-84				GEM-201		10%
C15	.0047	100	093-85				GEM-16247		10%
C16	50000	100	093-87	BPD-05	DF-503	BYB6S5		5HK-S5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	REGENCY PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	5000Ω	½	300-675-1	B-11		Q13-114	U12	Level
B	Shaft			Not Req.		Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*		76-1	US-26	Power On-Off
R2A	50K	½	300-675-3	B-31	A47-50K-S	Q11-123	U35	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	50K	½	300-675-2	B-32	A47-50K-Z	Q13-123	U33	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

* Use KR with CRL "Red Label" Controls and KB with "Blue Label" Controls

RESISTORS

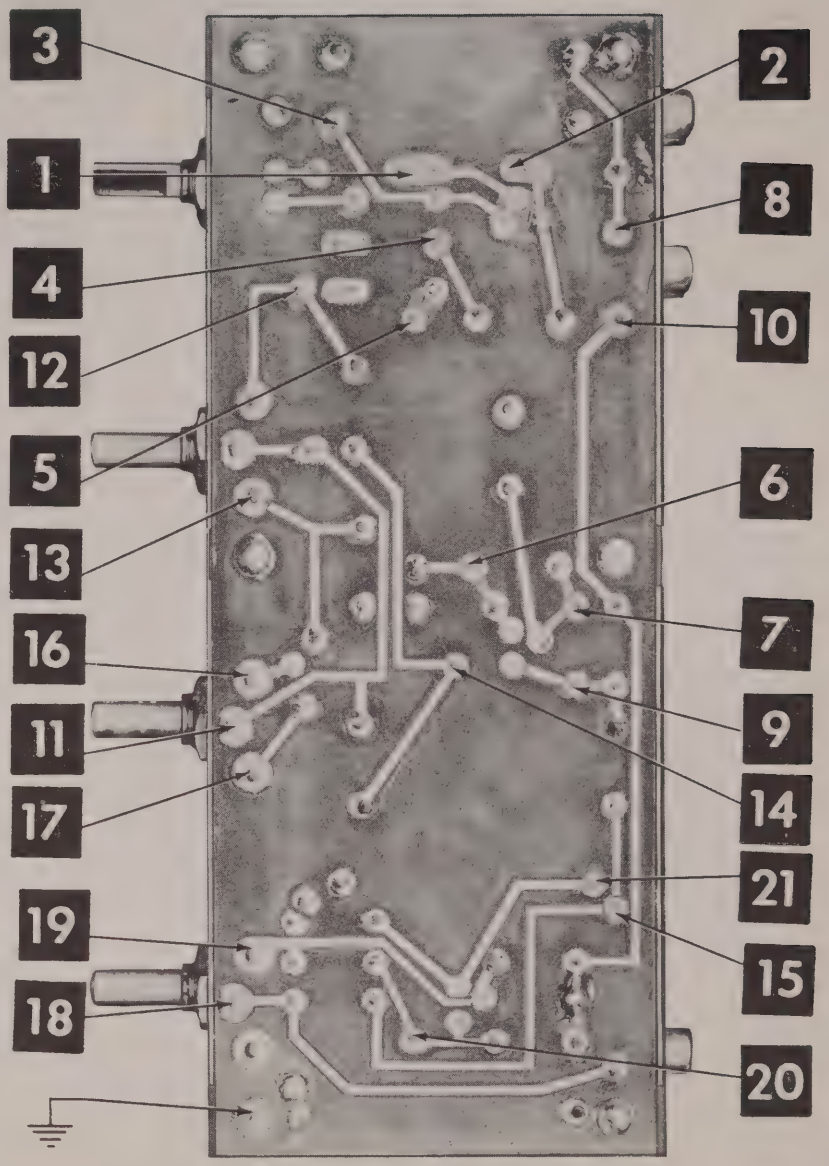
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REGENCY PART No.	NOTES
	OHMS	WATT		
R4	470K		093-74	
R5	470K		093-74	
R6	3900Ω		093-69	
R7	27K		093-72	
R8	220K 5%		093-66	
R9	18K 5%		093-63	
R10	6800Ω		093-70	
R11	2700Ω		093-68	
R12	6800Ω		093-70	
R13	33K		093-73	
R14	27K		093-72	

ITEM No.	RATING		REGENCY PART No.	NOTES
	OHMS	WATT		
R15	220K 5%		093-66	
R16	15K 5%		093-62	
R17	220Ω 5%		093-59	
R18	1000Ω		093-67	
R19	10K 5%		093-61	
R20	3900Ω		093-69	
R21	120K 5%		093-64	
R22	150K 5%		093-65	
R23	10K 5%		093-61	
R24	560Ω 5%		093-60	

PRINTED BOARD

A Howard W. Sams CIRCUITRACE* Photo
*TRADE MARK



REGENCY MODELS
HFT-1A, HFT-1K
FOLDER 13

PARTS LIST AND DESCRIPTIONS (Continued)

BATTERIES

ITEM No.	VOLTAGE	REGENCY PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			P6①		226①		M1600①	① Use 2 for 18 volt input.

MISCELLANEOUS

ITEM No.	PART NAME	REGENCY PART No.	NOTES
M2	Switch	300-676	Input Selector, Rotary Wafer Type
M3	Jack	093-49	Mic, Part of Rear Panel Ass'y, #093-11-49
M4	Jack	093-49	Xtal Phono, Part of Rear Panel Ass'y, #093-11-49
M5	Jack	093-49	Mag. Phono, Part of Rear Panel Ass'y, #093-11-49
M6	Jack	093-49	Tuner, Part of Rear Panel Ass'y, #093-11-49
M7	Jack	093-49	Output, Part of Rear Panel Ass'y, #093-11-49
	Printed Board	093-13-17	

CABINETS & CABINET PARTS

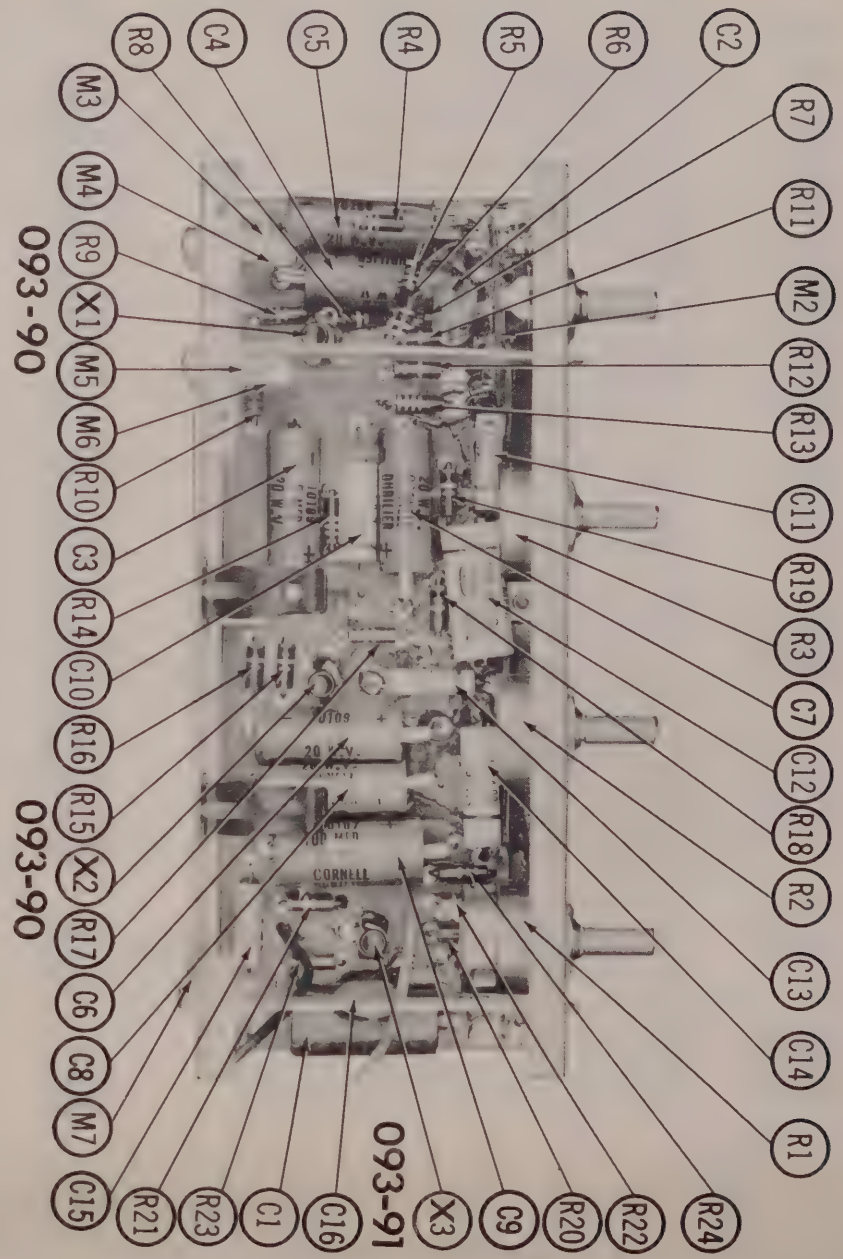
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	100-622-3	4 Used

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

SILVERTONE MODEL 8074 (Ch. 528.59051)

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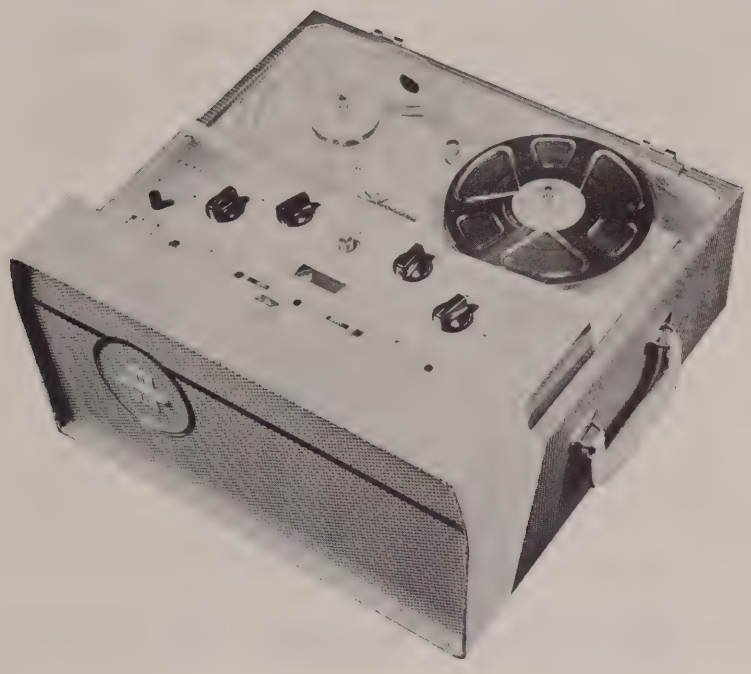

GENERAL INFORMATION

Silvertone Model 8074 is a binaural tape recorder.

Model 8074 records and plays back two tracks of material on standard width recording tape, which doubles the recording and playing time with no loss of frequency response or quality. Recordings can be made from a radio, television receiver or phonograph in addition to those made directly from a microphone.

This tape recorder has simplified controls and an illuminated meter type volume level indicator. Markings on meter shows proper volume level at which to record. Meter light also serves to indicate when unit is on.

Model 8074 has two tape speeds, 3 3/4" and 7 1/2" per second. Using both tracks of tape, recording time is as follows:

Reel Size	3 3/4" Speed	7 1/2" Speed
5" (600 ft.)	1 hour	1/2 hour
7" (1200 ft.)	2 hours	1 hour

Connect this recorder to an outlet supplying 110-120 volts, 60 cycles AC only.

Supplied by:

Sears, Roebuck & Co.
925 S. Homan Ave.
Chicago 7, Illinois

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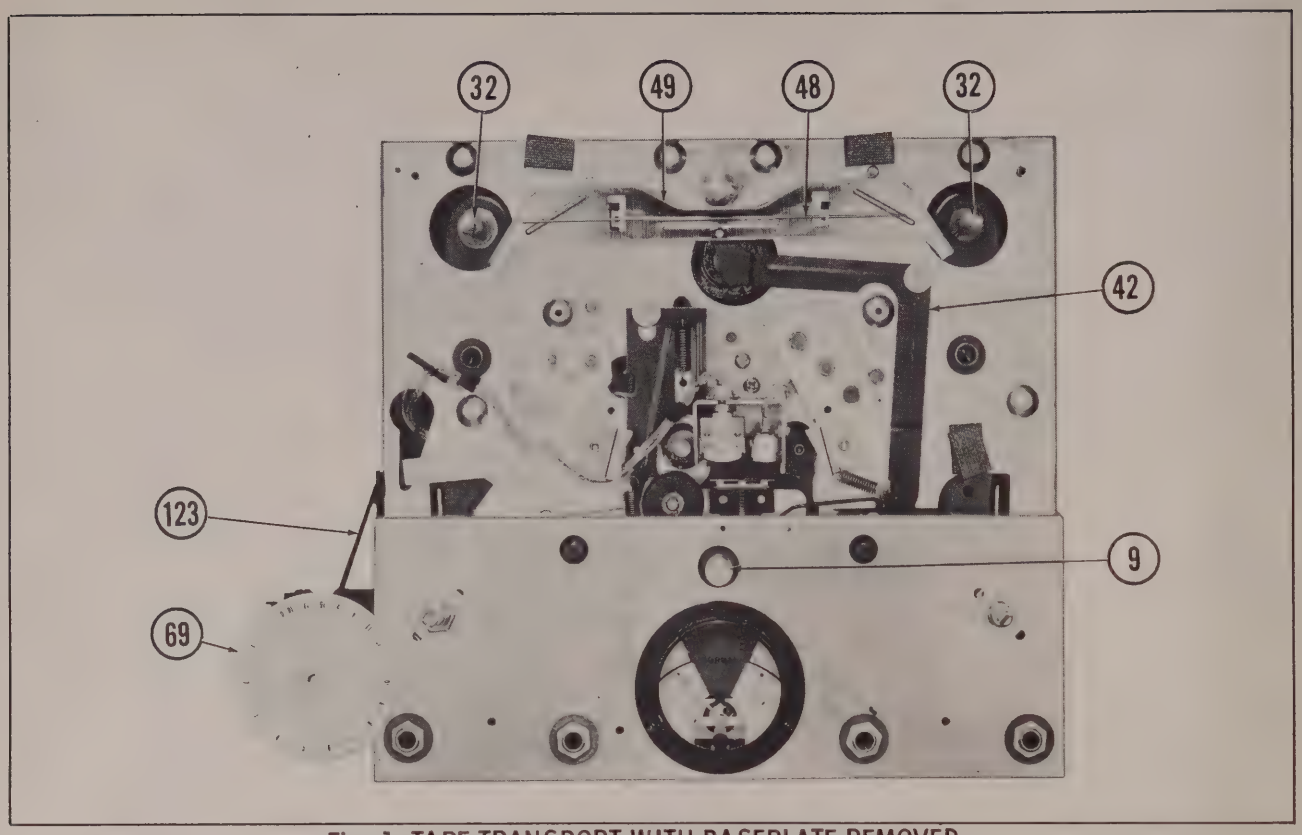


Fig. 1 TAPE TRANSPORT WITH BASEPLATE REMOVED

PREPARING RECORDER FOR OPERATION

1. Remove power cord, microphone, empty reel, and reel of tape from storage space at rear of set.

2. Plug power cord into any AC outlet having proper frequency and power.

3. Before operating, the operator should familiarize himself with the controls.

FUNCTION OF CONTROLS

On-Off-Loudness Control

Left-hand knob on recorder control panel energizes the amplifier and controls volume on record and playback.

Tape Drive Control

This control operates the tape drive mechanism for record and playback. It has two postions: Idle (left or counterclockwise) and Playback (right or clockwise).

Record-Edit Control

This control is used with the tape drive control. With Record-Edit control in up (normal) position, amplifier circuit is set for playback. With Record-Edit control held down and Tape Drive control turned to right, Record-Edit control is locked in down position, and recorder will record.

Fast Forward-Rewind Control

With Tape Drive control in Idle position, turning Forward-Rewind control to right (clockwise) rapidly winds tape on take-up reel. Moving to left (counterclockwise) rapidly rewinds tape on feed reel.

Tone-Monitor Control and Motor Switch

When Amplifier is on, the motor is turned on and off by this control. It acts as a monitor control as well as regulating tone during playback.

With this control turned off, tape mechanism may be engaged and Loudness control set while tape remains stationary.

Speed Control

To change speed, place speed button Up for 3 3/4 ips and Down for 7 1/2 ips.

CAUTION: Do not operate speed control unless motor is running.

Threading Tape

1. Place full reel of tape on right reel plate and an empty reel on left reel plate. Reel slots must engage pins on reel plates.

2. Unwind about 10" of tape. Pull a section of tape taut with both hands and insert in tape slot. Make sure dull-coated side faces rear of recorder.

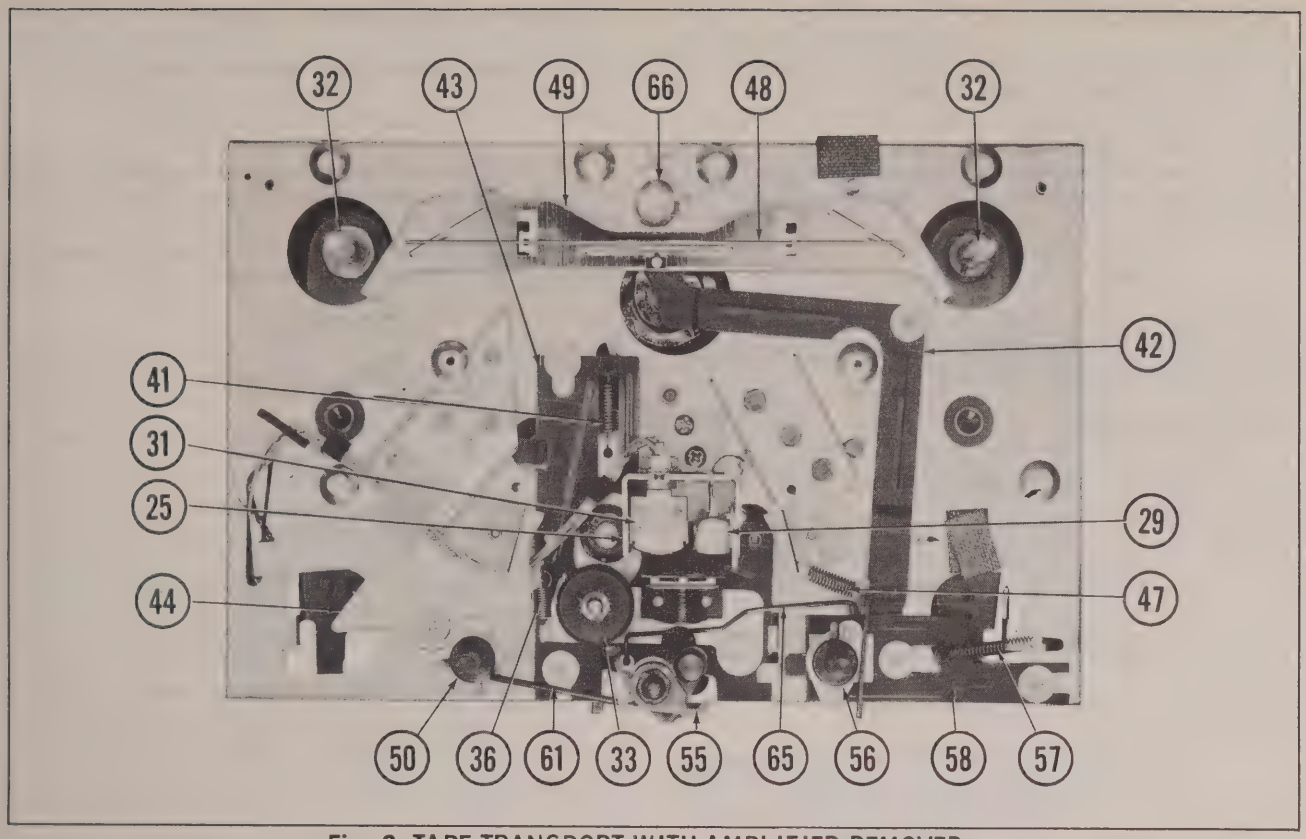


Fig. 2 TAPE TRANSPORT WITH AMPLIFIER REMOVED

3. Insert free end of tape into one of three radial slots in hub of empty reel. Turn reel several turns clockwise until tape is secured and all slack is taken up between reels.

To Record from Microphone

1. Turn On-Off-Loudness control on.
2. Insert microphone plug into Mike jack.
3. Make sure Tone-Monitor and Motor Switch is off. Depress Record-Edit control and turn Tape Drive control to right until both controls lock in place.
4. Speak into microphone in a normal voice and turn Loudness control to right until pointer on Recording Level Meter fluctuates within Normal range only.
5. Turn on Tone-Monitor and Motor switch and adjust Tone-Monitor control to proper level. Adjust Speed control for desired speed, 3 3/4 or 7 1/2 ips.

NOTE: Correct recording volume is important. A signal that is too weak and does not cause record level to fluctuate will result in weak playback and high background noise. A signal that is too strong, causing the level indicator to go above the Normal range, will result in distortion.

To Record from Radio or TV Receiver

Recordings from a radio or TV Receiver may be made by one of three methods:

1. Place microphone about 6" to 12" in front of receiver speaker. Turn receiver volume control to a normal level and tone control to maximum treble. Set recording level and proceed with recording as described under "To Record from Microphone."
2. Use speaker cable made with a two-conductor phone plug on one end and two alligator clips on the other end. Connect alligator clips across voice-coil terminals on receiver speaker and insert cord plug into Radio jack. Set receiver volume and tone controls as described in Step 1. Set recording level and proceed as described under "To Record from Microphone."
3. Use a shielded cable with a two-conductor phone plug on one end and with the other end connected across receiver volume control. Insert phone plug into Radio jack. Set recording level and proceed with recording as described under "To Record from Microphone." The receiver volume and tone controls have no effect on the recording.

To Record from Phonograph

1. If a phone-type plug is used on pickup leads, insert plug into Radio jack, set recording level, and proceed as described under "To Record from microphone."
2. If the more common pin-type plug is used, an adaptor is needed. Insert pin plug into adaptor and plug adaptor into Radio jack.

Dual-Track Recording

1. After a reel of tape has been recorded, turn Tape Drive control to Idle.
2. Remove reels from recorder. Turn over full reel and place on right reel plate; place empty reel on left reel plate.
3. Properly thread tape and proceed with recording.
4. After this track has been recorded, first track can be played without rewinding by reversing reel as described in Step 2.

To Play A Recording

1. Thread tape as described under "Threading Tape."
2. Without pressing Record-Edit button, turn Tape Drive control clockwise.
3. Adjust Loudness and Tone controls for desired listening level.

To Use an External Speaker

Frequency response can be improved by using a larger speaker than the one in the recorder. To play recorder with an external speaker, use the speaker cable supplied as outlined in the following:

1. Connect cable to external speaker with alligator clips.
2. Plug speaker into external speaker jack. Recorder will now play through the external speaker.

CAUTION: Do not plug cable into Output jack unless external speaker is attached to plug, because output tube, transformer, and Tone control may be damaged.

To Edit and Splice Tape

NOTE: It is impossible to edit and splice one track without affecting the other track. Therefore, recordings to be edited should be limited to one track only.

1. Tape may be edited by cutting out unwanted portions or by joining selections into another sequence. Announcements may be inserted between selections. Unused sections can be spliced for re-use.
2. For best results, cut tape at a slight diagonal. Join ends on glossy side with splicing tape and trim off excess width.

Erasing Recorded Material

Any recording is automatically erased before a new one is put on the tape. To erase a recording without putting anything on tape, follow normal recording procedure, but leave Loudness control set at its extreme counterclockwise position.

To Use as a Public Address System

1. Insert microphone plug into Radio jack.
2. Leave Tape drive control on Idle.
3. Speak into microphone and adjust Loudness and Tone controls for desired level.
4. To avoid feedback howl, do not place microphone too close to speaker.

DISASSEMBLY

To Remove Unit from Case

1. Remove eight wood screws (11) from control panel escutcheon plate.
2. Remove all control knobs and reel plate assemblies.
3. Remove hex nuts and washers from controls.
4. Remove screws (6) and (7).
5. Remove front and rear top covers (1 & 15).
6. Remove top cover baffle (19).
7. Remove spacers (18).
8. Remove four screws from bottom of case.
9. Disconnect speakers.
10. Lift unit from case.

To Remove Amplifier from Tape Transport Mechanism

1. Disconnect head and motor leads.
2. Remove bottom cover by removing 5 snaps.
3. Remove screw at front center of chassis holding tape transport mechanism to chassis.
4. Remove screws holding chassis to brackets.
5. Lift chassis from tape transport mechanism.

To reassembly, reverse the foregoing procedure.

ADJUSTMENTS

Spindle End Play Adjustments

Spindles (32) should have 1/32" to 1/16" up and down movement. To obtain correct amount of end play, loosen set screw in pulleys (103) and (120) and move pulleys up or down.

Brake Adjustment

1. Bend tap A (see Exploded View) on take-up reel arm (77) and tab B (see Exploded View) on take-up lever (86) joined by take-up spring (85) until tabs are perpendicular to plate.
2. Plug line cord into outlet, turn on motor and amplifier switches, place Tape Drive control in Idle and Fast Forward-Rewind control in Neutral.

3. Place full reel of tape on take-up spindle but do not thread. Turn Fast Forward-Rewind control to Rewind position. Adjust tab C (see Exploded View) until take-up spindle rotates. Readjust until it stops.

4. Place full reel of tape on feed spindle but do not thread tape. Turn Fast Forward-Rewind control to Fast Forward position. Adjust tab D (see Exploded View) until feed spindle rotates. Readjust until it stops.

5. Since there may be interaction between these adjustments, Steps 3 and 4 may have to be repeated.

Take-up Tension Adjustment

If take-up tension is not properly adjusted, flutter will occur. This is particularly noticeable at 3 3/4 ips and during initial winding of tape on take-up reel. Do not adjust if flutter occurs during first few feet of tape take-up. This is normal, and recording should not be made during this time.

1. Place a full reel of prerecorded tape on feed spindle (right), thread tape as for playback, and wind about 5 feet of tape onto take-up reel. Use small (5") reels and tape recorded a 3 3/4 ips.

NOTE: Footage indicator belt must be on pulleys.

2. Check take-up reel action by slowly turning Record-Play control to Play. Take-up reel should start revolving at same time pressure roller (33) engages with capstan shaft F. If adjustment is correct, there should be no tape overrun before it starts to take up, or no flutter in the sound. If adjustment is required, proceed with Steps 3 and 4.

3. Bend tab B on take-up lever (86) to right or left until proper take-up action with no overrun or flutter is obtained and tape from feed reel to heads shows no evidence of vibrating.

4. Slight additional adjustment may be obtained by bending tab A on take-up reel arm (77) and tab G on take-up lever (86).

Play-Record Head Adjustment

If play-record head (31) is not perfectly aligned with tape, low output, loss of high frequencies, or track overlap may result.

To Align Play-Record Head (31)

1. First, adjust for output and frequency response. This adjustment must be made with a 3,000-cycle tape, recorded by a unit in good operating condition. Connect an output meter across speaker voice coil of unit to be adjusted. While playing back the 3,000-cycle note tape, move head back and forth on mounting until maximum deflection on output meter is achieved.
   If a 3,000-cycle note tape is not available, use a recording with a high note content and adjust as described in the foregoing.

Erase Head Adjustment

Erase head (29) and head mounting bracket assembly (25) have been prealigned at the factory, and no adjustments are provided. To replace erase head (29), play-record head (31) must be removed. After erase head is installed, play-record head (31) must be realigned. (See "Play-Record Head Adjustment.")

CLEANING

Record and erase heads, capstan shaft F (see Exploded View) and pressure roller (33) accumulate tape coating residue, worn off the tape as it passes these parts. This can cause distortion, weak output, and poor erasure. Use a soft cloth and alcohol to clean head surfaces, capstan, and pressure roller.

LUBRICATION

Approximately once a year, or when parts are replaced, lubricate as follows:

With No. 20 motor oil:

1. Take-up reel arm (77) bushing.

2. Feed reel arm (109) bushing.

3. Bearings of spindles (32).

4. Flywheel (98) bearings.

With "Staput" No. 312 grease, "Lubriplate" or equivalent.

1. Pressure plate (43) at slide button, and guide on right side.

2. Stud of cam and bushing assembly (63).

CAUTION: Do not oil motor bearings unless absolutely necessary. Excess oil will be thrown off, causing slippage of pulley and rollers. When necessary to oil bearings, use as little oil as possible. Wipe any oil from pulleys and rollers with a petroleum solvent such as alcohol. Do not use carbon tetrachloride.

AMPLIFIER ADJUSTMENT

The following adjustments should be made whenever circuit components are replaced or repaired.

These adjustments must be made with set turned on and in Record position with no signal input.

1. Adjust oscillator coil (L2) for 52.5-kc reading on frequency meter.

2. Adjust meter (R3) until needle rests directly over black dot at left side of meter. With meter (R3) properly adjusted, needle should move slightly when set is turned on and off.

3. To adjust 52.5-kc trap (L1), volume must be set at maximum. Adjust trap (L1) for minimum 52.5-kc reading at external amplifier jack.

4. Set hum adjust (R4) for minimum reading across load at external speaker jack with volume and treble set at maximum.

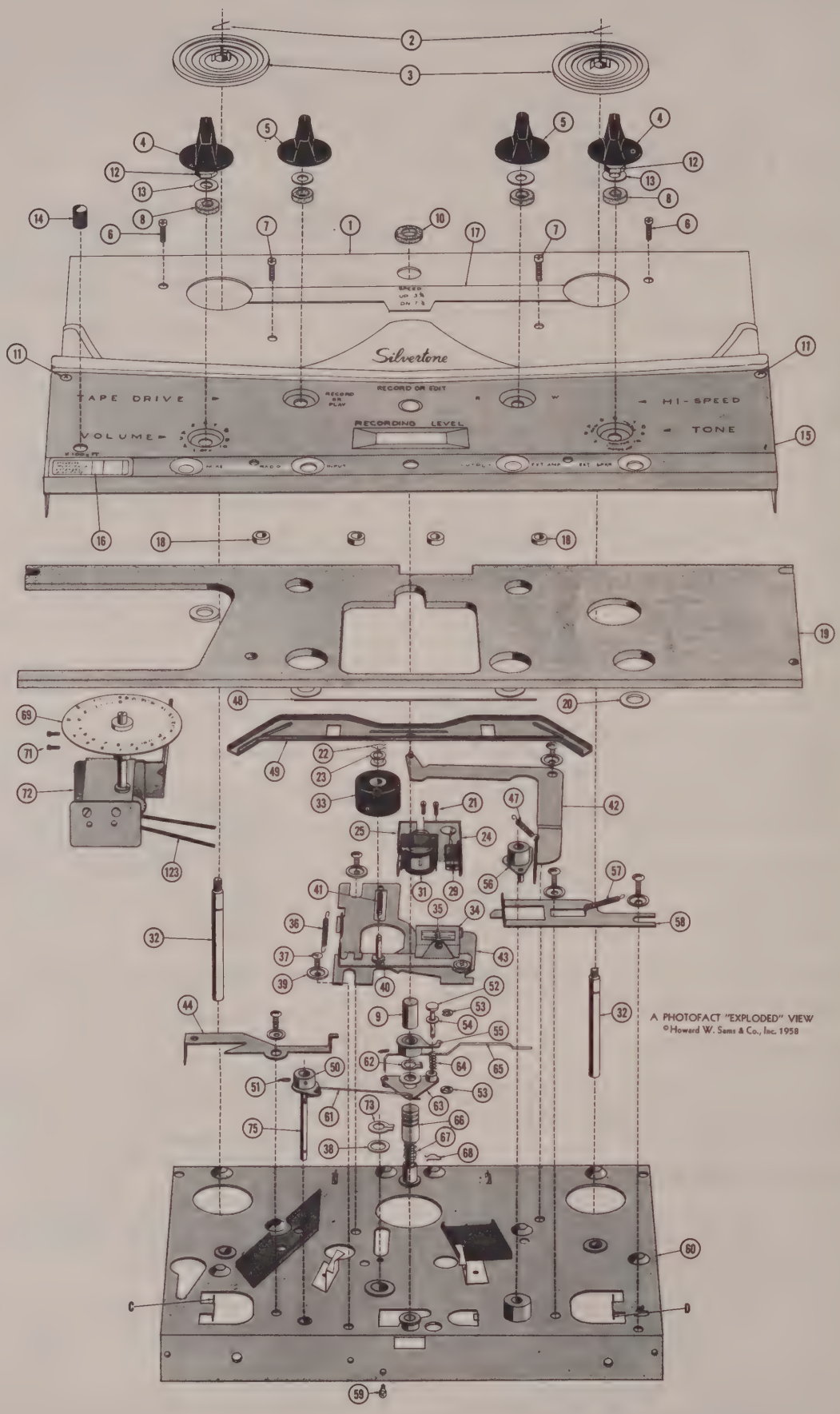


FIG. 3A EXPLODED VIEW OF PARTS ABOVE BASEPLATE

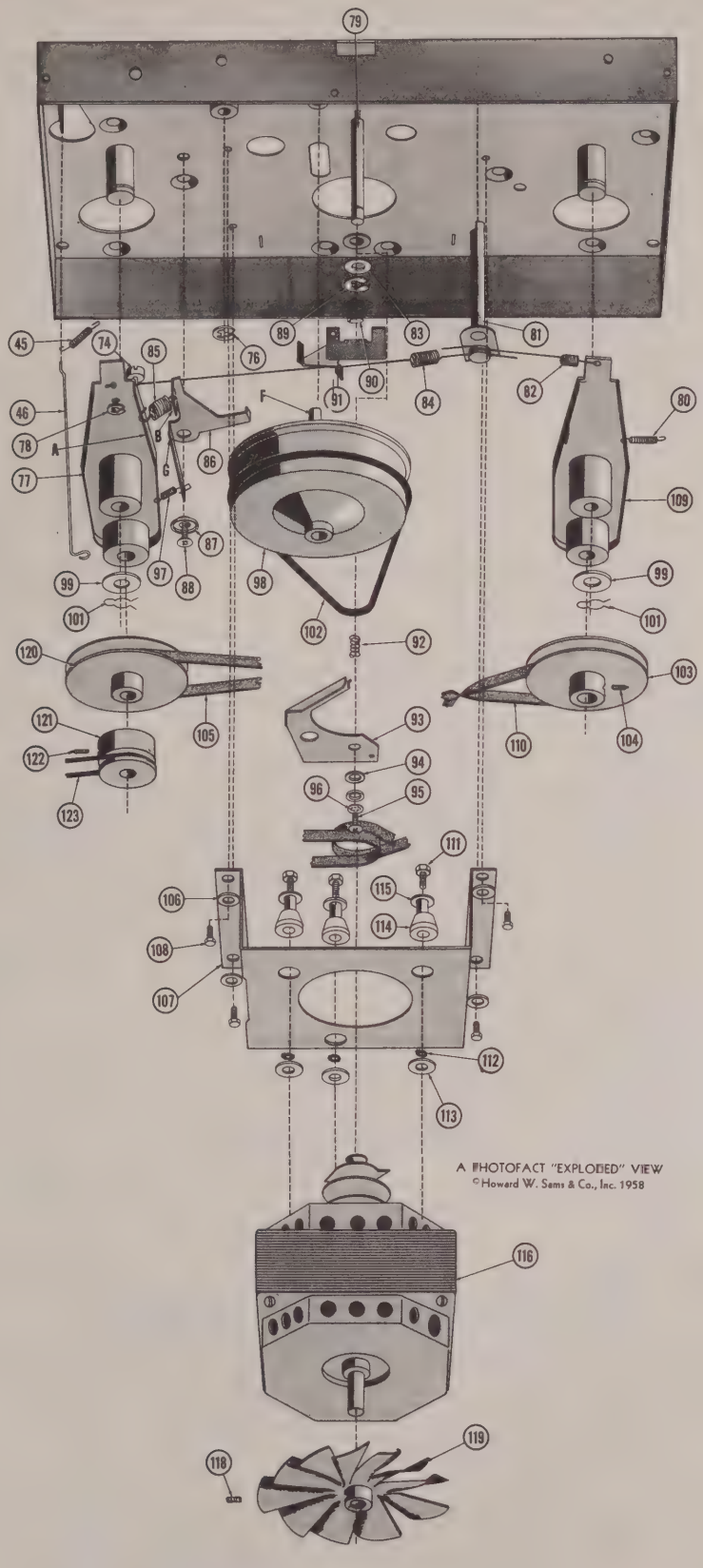


FIG. 3B EXPLODED VIEW OF PARTS BELOW BASEPLATE

TROUBLE CHART

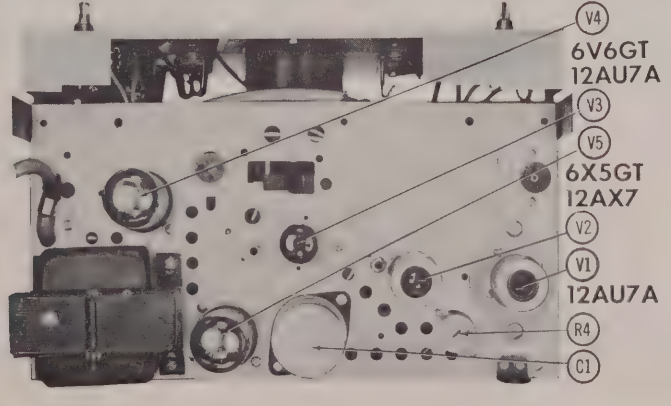
Symptom	Cause	Remedy
Will not take up tape properly.	1. Spindle (32) binding.	1. Lubricate.
	2. Drive belt (110) slipping.	2. Clean motor pulley, and take-up pulley and flange (103).
	3. Drive belt (110) broken.	3. Remove motor and lug assembly bracket (107) and replace drive belt (110).
	4. Set screw is loose in take-up pulley and flange (103).	4. Tighten leaving 1/32" to 1/16" end play in spindle.
	5. Take-up pulley and flange (103) broken.	5. Replace take-up pulley and flange (103).
Fast forward will not function properly.	1. See previous cause, except Step 2.	1. See previous remedy, except Step 2.
Fast rewind will not function properly.	1. Spindles (32) binding.	1. Lubricate.
	2. Drive belt (110) slipping.	2. Clean motor pulley, and take-up pulley and flange (103).
	3. Drive belt (110) broken.	3. Remove motor and lug assembly bracket (107) and replace drive belt (110).
	4. Set screw is loose in rewind pulley (120).	4. Tighten, leaving 1/32" to 1/16" end play in spindle.
	5. Rewind pulley (120) broken.	5. Replace pulley (120).
Speed variation or wow.	1. Dirty motor pulley, flywheel and shaft (98), and pressure roller (33), causing slippage.	1. Clean with a petroleum solvent, not carbon tetrachloride. If pressure roller (33) is oil-soaked, replace.
	2. Feed reel out of adjustment, causing too much feed reel drag.	2. Check adjustments as described under "Take-up Tension Adjustment."
	3. Flat spot on pressure roller (33), causing a rapid thumping sound while unit is running.	3. Replace pressure roller (33).

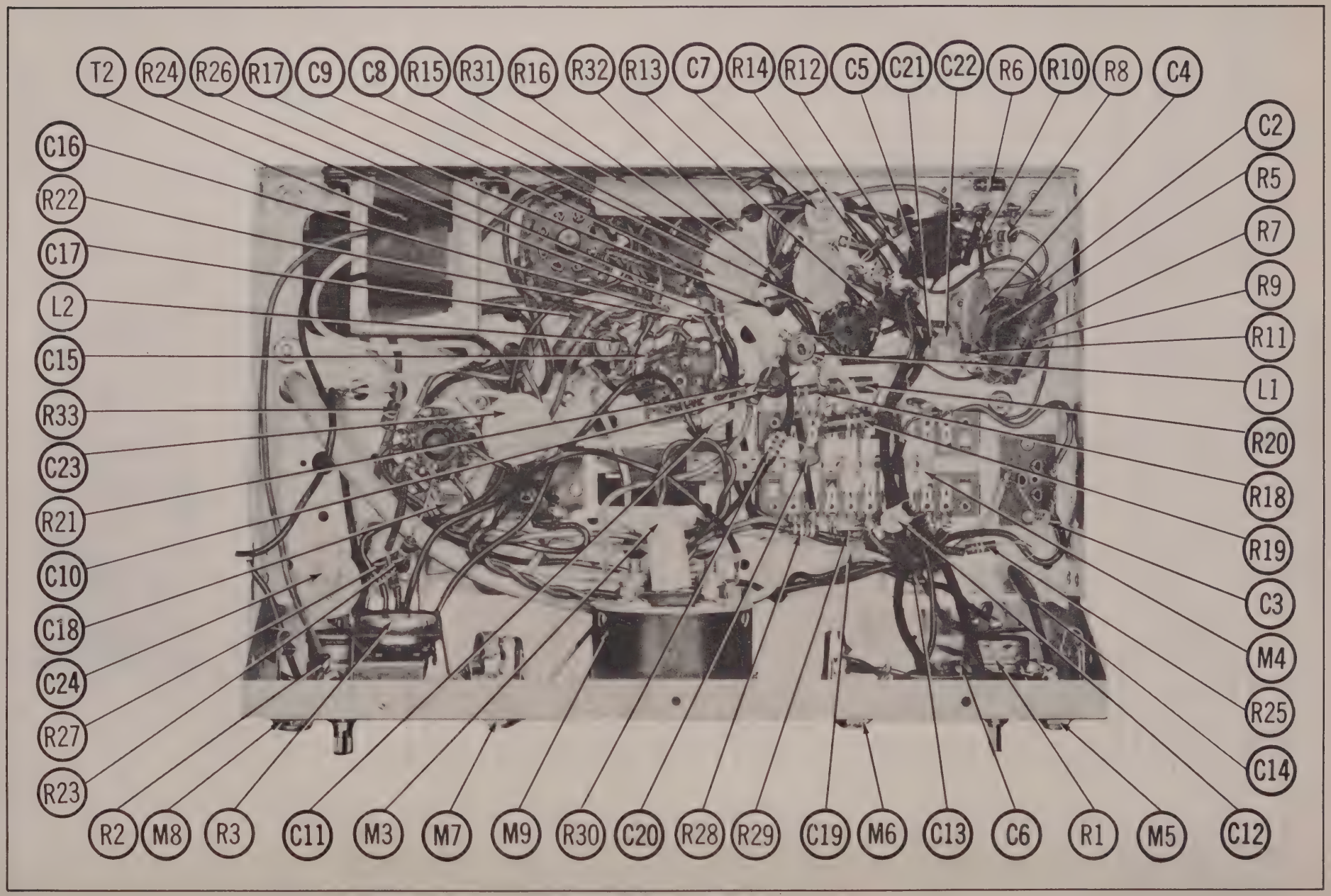
MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1	84-3757	Rear Top Cover
2	22-110-0	Reel Plate Retainer
3	84-3435	Reel Plate Ass'y.
4	52-809-0	Off-On, Loudness, Tone-Motor Knob
5	52-810-0	Play-Record, Fast Forward-Rewind Knob
6	97-583	#6-32 x 1/4" Phil. Truss Hd. Screw
7	97-584	#6-32 x 3/8" Phil. Ov. Hd. Screw
8	86-307	Flatwasher
9	52-833-0	Record-Edit Button
10	86-270	Rubber Washer
11	97-449	#6 x 1/2" Phil. Rd. Hd. Wood Screw
12	56-230	#3/8-32 Hex Nut
13	86-308	Flatwasher
14	52-802-0	Indicator Footage Knob
15	84-3499	Front Top Cover
16		Window Dial
17		Speed Control Indicator Escutcheon
18	77-2-0	Spacer
19	44-13-0	Top Cover Baffle
20	86-265	Fibre Washer
21	97-569	#6-32 x 1/4" Phil. Bd. Hd. Screw
22	22-40-1	Retainer
23	86-282	Cloth Washer
24	84-4640	Head Ass'y.
25	11-1115	Head Mounting Bracket
26	84-3423	Ground Wire & Lug
27	86-295	Flatwasher
28	57-203111	#2-56 x 3/16" Screw
29	33-273-0	Erase Head
30	45-4-0	3 Prong Plug
31	84-4739	Play-Record Head
32	84-3404	Spindle Ass'y.
33	39-1-5	Pressure Roller Ass'y.

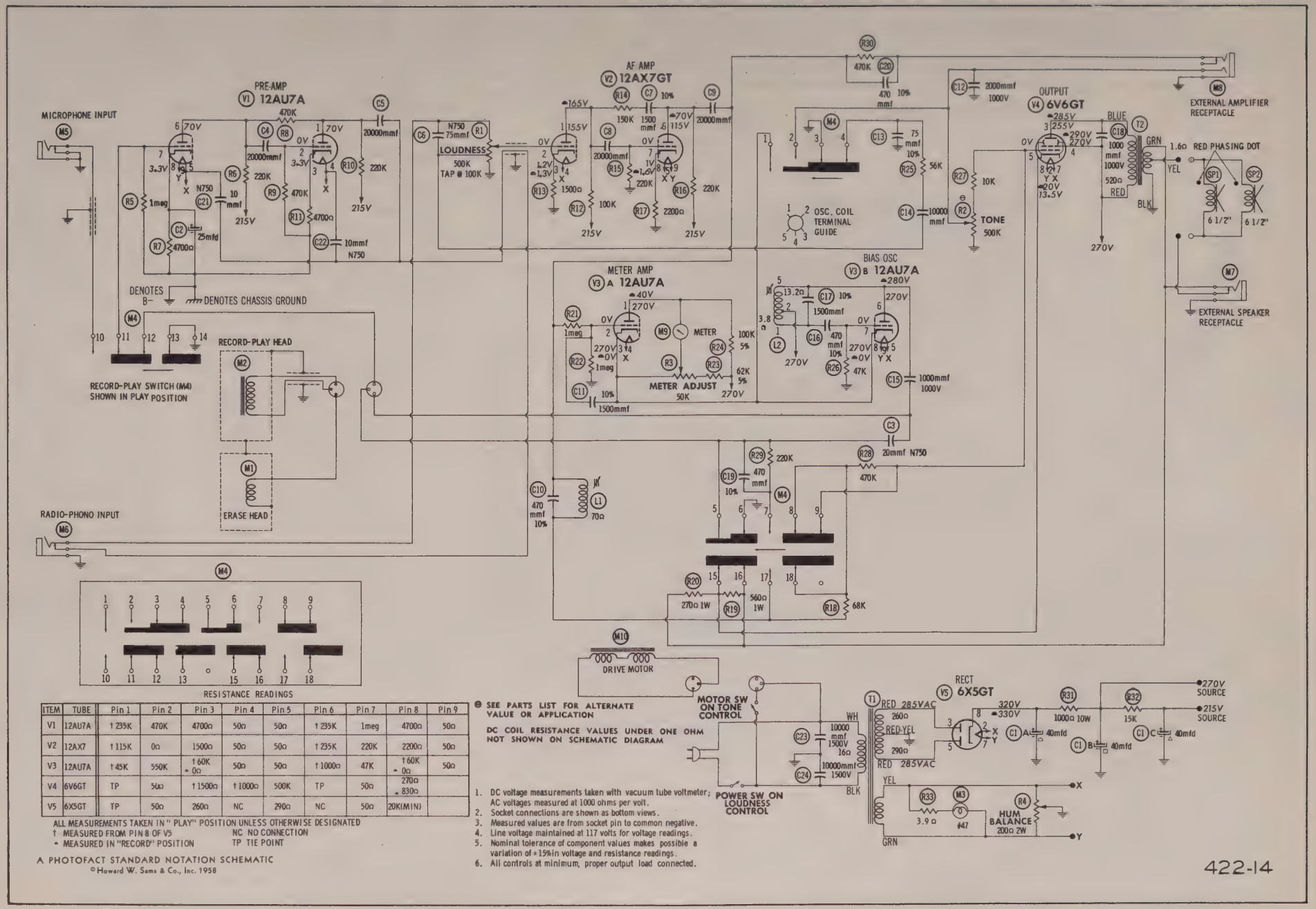
Ref. No.	Part No.	Description
34	84-3401	Pressure Shoe Ass'y.
35	70-253-0	Pressure Shoe Spring
36	70-258-0	Pressure Roller Spring
37	97-573	#6-32 x 1/4" Phil. Fil. Hd. Screw
38	86-280	Capstan Washer
39	72-135	Slide Button
40	84-3408	Pressure Roller Arm Ass'y.
41	70-251-0	Slide Return Spring
42	84-3455	Brake Lever & Pin Ass'y
43	84-3458	Pressure Plate & Spring Ass'y.
44	22-15-4	Foot Switch Lever
45	70-244-0	Foot Switch Return Spring
46	39-5-3	Foot Switch Linkage Wire
47	70-251-0	Return Spring
48	70-264-0	Brake Plate Spring
49	29-114-1	Brake Plate
50	84-3439	Motion Cam Ass'y.
51	97-577	#6-32 x 3/8" Slab Hd. "Cone Pt." Set Screw
52	72-134	Plunger
53	22-44-1	Retainer
54	86-302	Flatwasher
55	84-3443	Catch Ass'y.
56	84-3442	Hub Ass'y.
57	70-267-0	Return Spring
58	22-16-4	Interlock Lever
59	97-569	#6-32 x 1/4" Phil. Bd. Hd. Screw
60	84-3461	Motorboard Ass'y.
61	22-20-4	Drive Link Wire
62	22-52-1	Retainer
63	84-3728	Cam & Bushing Ass'y.
64	70-263-0	Plunger Spring
65		Take-up Brake Rod (Part of Ref. 63)
66	84-3405	Plunger Knob & Shaft Ass'y.
67	70-259-0	Compression Spring
68	70-256-0	Plunger Detent Spring
69	84-3396	Dial Ass'y.
70	62-81-0	"O" Ring
71	97-566	#6-32 x 1/4" Hex Hd. Screw, Special
72	39-1-2	Indicator
73	22-37-1	Retainer
74	39-1-0	Foot Switch Adjustment Cam
75	39-6-3	Motion Shaft (Left)
76	22-38-1	Retainer
77	84-3452	Take-up Reel Arm Ass'y.
78	22-46-1	Spring Washer

Ref. No.	Part No.	Description
79	39-9-3	Control Shaft
80	70-252-0	Brake Spring (Right)
81	84-3446	Cam & Stud Ass'y. Shaft
82	70-324-0	Tape Tension Spring (Right)
83	86-288	Rubber Washer
84	70-262-0	Tape Tension Spring (Left)
85	70-250-0	Take-up Spring
86	22-13-4	Take-up Lever
87	72-135	Slide Button
88	97-573	#6-32 x 1/4" Phil. Fl. Hd. Screw
89	22-45-1	Retainer
90	70-265-0	Control Shaft Return Spring
91	84-3465	Edit Lever Ass'y. Bracket
92	70-259-0	Compression Spring
93	22-14-4	Belt Transfer Fork
94	86-284	Flatwasher
95	97-569	#6-32 x 1/4" Phil. Pan Hd. Screw
96	86-45	#6 Int. Tooth Lockwasher
97	70-257-0	Brake Spring (Left).
98	84-3466	Flywheel & Shaft Ass'y.
99	86-290	Flatwasher
101	22-42-1	Hairpin Retainer
102	62-79-0	Flywheel Belt
103	84-3406	Take-up Pulley & Flange Ass'y.
104	97-577	#6-32 x 3/8" Slab Hd. Set Screw
105	62-78-0	Drive Belt
106	86-294	Flatwasher
107	84-3407	Motor & Lug Ass'y. Bracket
108	97-567	#8-32 x 3/16" Hex Hd. Screw
109	84-3450	Feed Reel Arm Ass'y.
110	62-78-0	Drive Belt
111	97-574	#8-32 x 5/8" Hex Hd. Screw
112	86-293	#8 Int. Tooth Lockwasher
113	86-292	Flatwasher
114	62-74-0	Rubber Grommet
115	65-123	Eyelet
116	84-3457	Motor, Plug & Pulley Ass'y.
117	45-4-0	3 Prong Plug
118	97-619	#8 x 3/16" Cup Pt. "Allen Hd." Set Screw
119	84-4240	Fan, Hub & Set Screw Ass'y.
120	84-3431	Rewind Pulley & Flange Ass'y.
121	39-4-1	Footage Meter Pulley
122	97-572	#6-32 x 1/2" Slab Hd. "Cone Pt." Set Screw
123	62-80-0	Drive Belt





AMP CHASSIS - BOTTOM VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AU7A	†235K	470K	4700Ω	50Ω	50Ω	†235K	1meg	4700Ω	50Ω
V2	12AX7	†115K	0Ω	1500Ω	50Ω	50Ω	†235K	220K	2200Ω	50Ω
V3	12AU7A	†45K	550K	†60K ▪ 0Ω	50Ω	50Ω	†1000Ω	47K	†60K ▪ 0Ω	50Ω
V4	6V6GT	TP	50Ω	†1500Ω	†1000Ω	500K	TP	50Ω	270Ω ▪ 830Ω	
V5	6X5GT	TP	50Ω	260Ω	NC	290Ω	NC	50Ω	20K(MIN)	

ALL MEASUREMENTS TAKEN IN " PLAY" POSITION UNLESS OTHERWISE DESIGNATED
† MEASURED FROM PIN 8 OF V5
▪ MEASURED IN "RECORD" POSITION
NC NO CONNECTION
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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SILVERTONE MODEL 8074 (Ch. 528.59051)

PARTS LIST AND DESCRIPTIONS
TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Preamplifier	12AU7A	
V2	AF Amplifier	12AX7	
V3	Meter Amp. -Bias Osc.	12AU7A	

ITEM No.	USE	TYPE	NOTES
V4	Output	6V6GT	
V5	Rectifier	6X5GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	350	18-36-3		D0032	FP420. 35	TMQ-12	D-167	R2478 *
B	■40	300			BR3035	TC77	TMS-37	MT-4540	
C	▲40	300							
C2	25	25	18-52-5	PRS25V25	BBR25-25	TC-26	TD-25-25	MT-0225	TVA-1205

* Non-Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	20		15-20011	N750-DI20	DTN-20	C10Q2U		5TCU-Q2	N750
C4	20000		15-20316	BPD-02	DD-203	BYB6S2		5HK-S2	
C5	20000		15-20316	BPD-02	DD-203	BYB6S2		5HK-S2	
C6	75		15-75011	N750-DI75	DTN-75	C10Q75U		5TCU-Q75	N750
C7	1500		15-15211			1R5D15		MS-215	10%
C8	20000		15-20316	BPD-02	DD-203	BYB6S2		5HK-S2	
C9	20000		15-20316	BPD-02	DD-203	BYB6S2		5HK-S2	
C10	470		15-47111		D6-471	5R5T47		MS-347	10%
C11	1500		15-15211			LR5D15		MS-215	10%
C12	2000	1000	15-20226		DD-202	BYA10D2		5GA-D2	
C13	75		15-75011	NP0-DI75	DTZ-75	C10Q75C		5TCC-Q75	10%
C14	10000		15-10316	BPD-01	DD-103	BYA6S1		5HK-S1	
C15	1000	1000	15-10226	HVD-15-1000	DD-102	BYA10D1	DC3021	5GA-D1	
C16	470		15-47111			5R5T47		MS-347	10%
C17	1500		15-15211	1464-0015		1R5D15		MS-215	10%
C18	1000	1000	15-10226	HVD-15-1000	DD-102	BYA10D1	DC3021	5GA-D1	
C19	470		15-47111		D6-471	5R5T47		MS-347	10%
C20	470		15-47111		D6-471	5R5T47		MS-347	10%
C21	10		15-10011	N750-DI10	DTN-10	C10Q1U	NT-541	5TCU-Q1	N750
C22	10		15-10011	N750-DI10	DTN-10	C10Q1U	NT-541	5TCU-Q1	N750
C23	10000	1500	20-75-0	DAC-27	DD16-103	HVE16S1		BL-S10	
C24	10000	1500	20-75-0	DAC-27	DD16-103	HVE16S1		BL-S10	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	24-271-0	BT-66	A47F3-500K	Q13-133X	UT-427	Loudness, Tap@100K
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*	SWE-12	76-1	US-26	Power On-Off
R2A	500K	½	24-143-0	B-60	A47-500K-Z	Q-13-133X	U48	Tone Note 1.
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*	SWE-12	76-1	US-26	Motor On-Off
R3	50K	½	24-3-3	BX-31				Meter Adj.
R4	200Ω	2(WW)	24-1-3					Hum Balance

* Use KR with CRL "Red Label" controls and KB with "Blue Label" controls.
Note 1. Part #24-143-2 may be used in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	SILVERTONE PART No.	NOTES
R5	1meg		60-10501	
R6	220K		60-22401	
R7	4700Ω		60-47201	
R8	470K		60-47401	
R9	470K		60-47401	

ITEM No.	RATING OHMS	RATING WATT	SILVERTONE PART No.	NOTES
R10	220K		60-22401	
R11	4700Ω		60-47201	
R12	100K		60-10401	
R13	1500Ω		60-15201	
R14	150K		60-15401	

PARTS LIST AND DESCRIPTIONS (Continued)
RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	SILVERTONE PART No.	NOTES
R15	220K		60-22401	
R16	220K		60-22401	
R17	2200Ω		60-22201	
R18	68K		60-68302	
R19	560Ω	1	60-56111	
R20	270Ω	1	60-27111	
R21	1meg		60-10501	
R22	1meg		60-10501	
R23	62K 5%		60-62305	
R24	100K 5%		60-10405	

ITEM No.	RATING OHMS	RATING WATT	SILVERTONE PART No.	NOTES
R25	56K		60-56301	
R26	47K		60-47301	
R27	10K		60-10302	
R28	470K		60-47401	
R29	220K		60-22401	
R30	470K		60-47401	
R31	1000Ω	10WW	61-106	
R32	15K		60-15302	
R33	3. 9Ω		60-39901	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA SILVERTONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	52. 5KC Trap	10-9-5					
L2	Bias Osc.	10-33-4					

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .38A	560VCT @ .060A	6. 3V @ 2A	80-3-0		P-3048①			22R01 ①	R-5B①

① Use original shields.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5000Ω	3-4Ω Tap@ 1-2Ω	80-3-1	Z1001	A-2902①	AU-608	A-3850	24S64①	S-51X	①Drill new mounting hole.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	6½"	PM	3-4Ω	33-309-4	6A21	
SP2	6½"	PM	3-4Ω	33-309-4	6A21	

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M1	Erase Head	33-273-0	(#8015A)
M2	Record-Play Head	84-4739	Includes Adaptor
M3	Lamp	89-7	Meter Light, #47
M4	Switch	69-241-0	Record-Play, Slide Type
M5	Jack	45-2-1	Mike, Shorting Type
M6	Jack	45-2-1	Radio-Phono, Shorting Type
M7	Jack	45-2-1	External Speaker, Shorting Type
M8	Jack	45-1-1	External Amplifier, 2 Circuit Type
M9	Meter	83-1115	
M10	Motor	84-3457	Includes Plug and Pulley Ass'y.
	Microphone	33-39-1	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

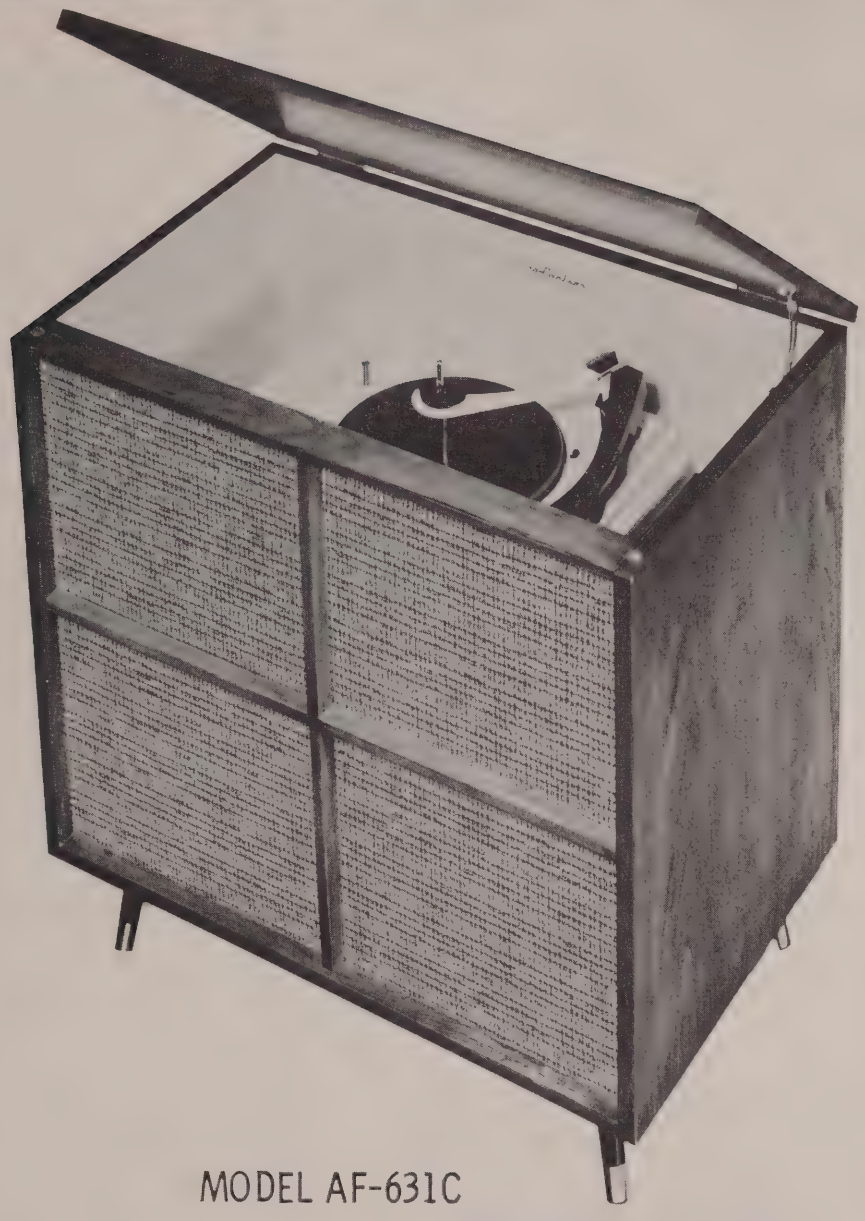
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

STROMBERG-CARLSON
MODELS AF-631C, AF-631K, AF-631M

STROMBERG-CARLSON
MODELS AF-631C, AF-631K, AF-631M



MODEL AF-631C

STROMBERG-CARLSON
MODELS AF-631C, AF-631K, AF-631M

TRADE NAME	Stromberg-Carlson Models AF-631C, AF-631K, AF-631M
MANUFACTURER	Stromberg-Carlson, National Service Dept., 1400 N. Goodman St., Rochester 3, N.Y.
TYPE SET	AC Operated Phono Amplifier with 4 Speed Automatic Record Changer
TUBES (Five)	Types 6AV6 1st AF Amplifier, 12AX7 2nd AF Amp. - Phase Inv., (2) 6V6GT Output, 6X5GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .43 Amp. @ 117 Volts AC (42 Watts Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER PART # 148000-010 SEE SIMILAR V-M 1200A-PHOTOFACT SET 353 FOLDER 16 OR RECORD CHANGER MANUAL RC-10

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st AF Amplifier	6AV6	
V2	2nd AF Amp-Phase Inv.	12AX7	
V3	Output	6V6GT	

ITEM No.	USE	TYPE	NOTES
V4	Output	6V6GT	
V5	Rectifier	6X5GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Stromberg-Carlson PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲20	450	111090-000	AFH 4-76	D0624	FP430.2	TMQ-90	Q-370	TVL-4731
B	■20	450							
C	▲40	350							
D	25	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	Stromberg-Carlson PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	4700			BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C3	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C4	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C5	4700			BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C6	220			S1220	D6-221	LT6T22	UC-5322	5GA-T22	
C7	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C8	4700			BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C9	.02	400		P488N-02	DD-203	CUB4S2	GEM-412	4TM-S2	
C10	.02	400		P488N-02	DD-203	CUB4S2	GEM-412	4TM-S2	
C11	4700			BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C12	4700			BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C13	.01	600		P688N-01	D6-103	CUB6S1	GEM-611	6TM-S1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Stromberg-Carlson PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	1meg	1/2	145201-000					Volume, Tap ⓐ 500K
R2A	1meg	1/2	145203-000	B-70	A47-1meg-Z	Q13-137	U53	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3	1meg	1/2	145202-000					Bass

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

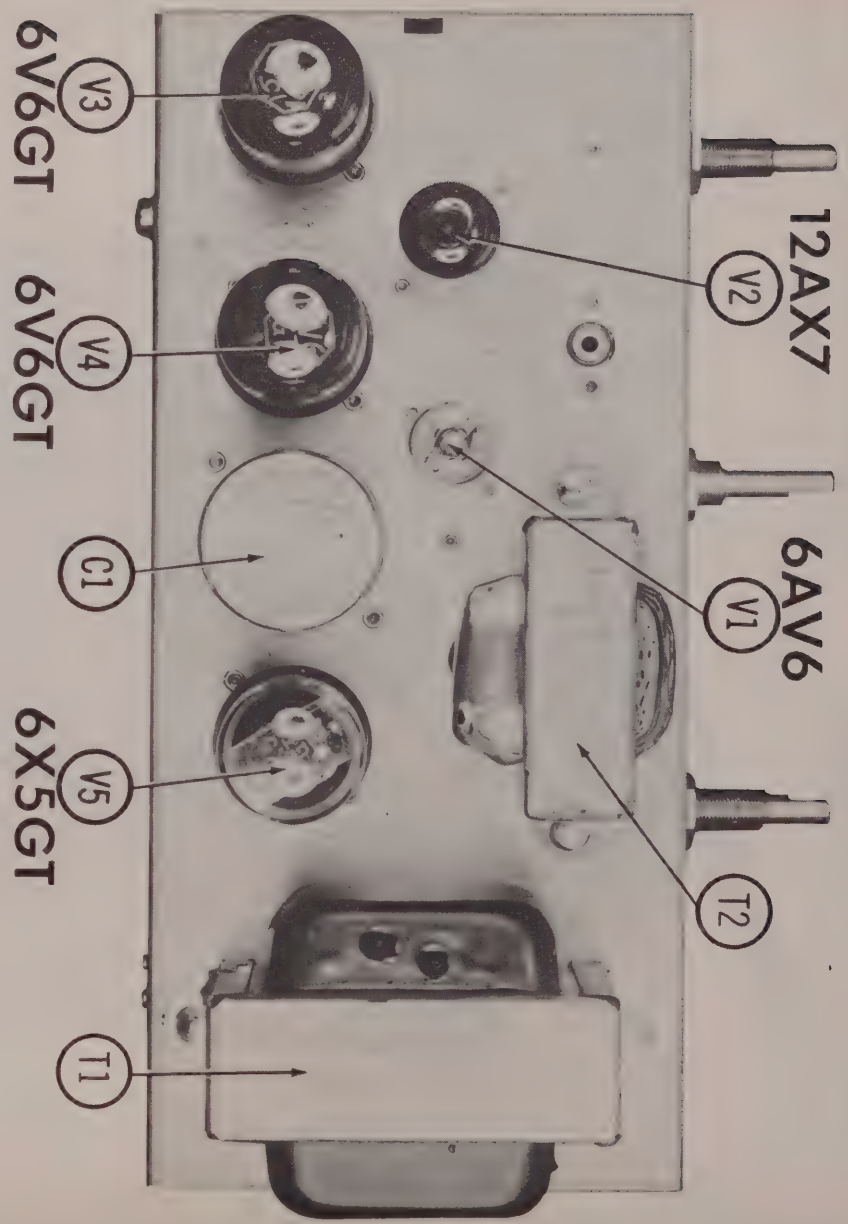
ITEM No.	RATING		Stromberg-Carlson PART No.	NOTES
	OHMS	WATT		
R4	47K			
R5	4.7meg			
R6	470K			
R7	470K			
R8	5600Ω			
R9	47K			
R10	100K			
R11	4700Ω			
R12	27K			
R13	220K			

ITEM No.	RATING		Stromberg-Carlson PART No.	NOTES
	OHMS	WATT		
R14	220K			
R15	6800Ω			
R16	1000Ω			
R17	470K			
R18	1000Ω			
R19	470K			
R20	390Ω	2		
R21	10K			
R22	5600Ω	2		

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	Stromberg-Carlson PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.
T1	117V ⓐ .45A	620VCT ⓐ .060A	6.3V ⓐ 2A	161455-000						

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Stromberg-Carlson PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	6400Ω CT	3-4Ω	161295-000	Z1011	A-2935	AU-606	A-3825	24S55	S-55X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA Stromberg-Carlson PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	12"	PM	4-6Ω	155865-000	12A6AZ5.3	① Used in place of 155915 in some versions
SP2	8"	PM	4-6Ω	155915-000	8A6PAZ5	
	8"	PM	4-6Ω	155875-000①	8A6Z6	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA Stromberg-Carlson PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	REMARKS
M1	171000-043	89-TB				

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA Stromberg-Carlson PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M2	171000-041① 171000-124②	† JPS-39 or †♦ JPS-39SD or ♦JPS-39D	† W-41TPS or †♦W-41DS or ♦W-41TPD	† Jewel ♦ Diamond ① Dual Sapphire ② Diamond LP, Sapphire 78

MISCELLANEOUS

ITEM No.	PART NAME	Stromberg-Carlson PART No.	NOTES
M3	Switch	171000-033	Power on-off, Rotary Snap SPST
M4	Motor	171000-039	Phono

CABINETS & CABINET PARTS

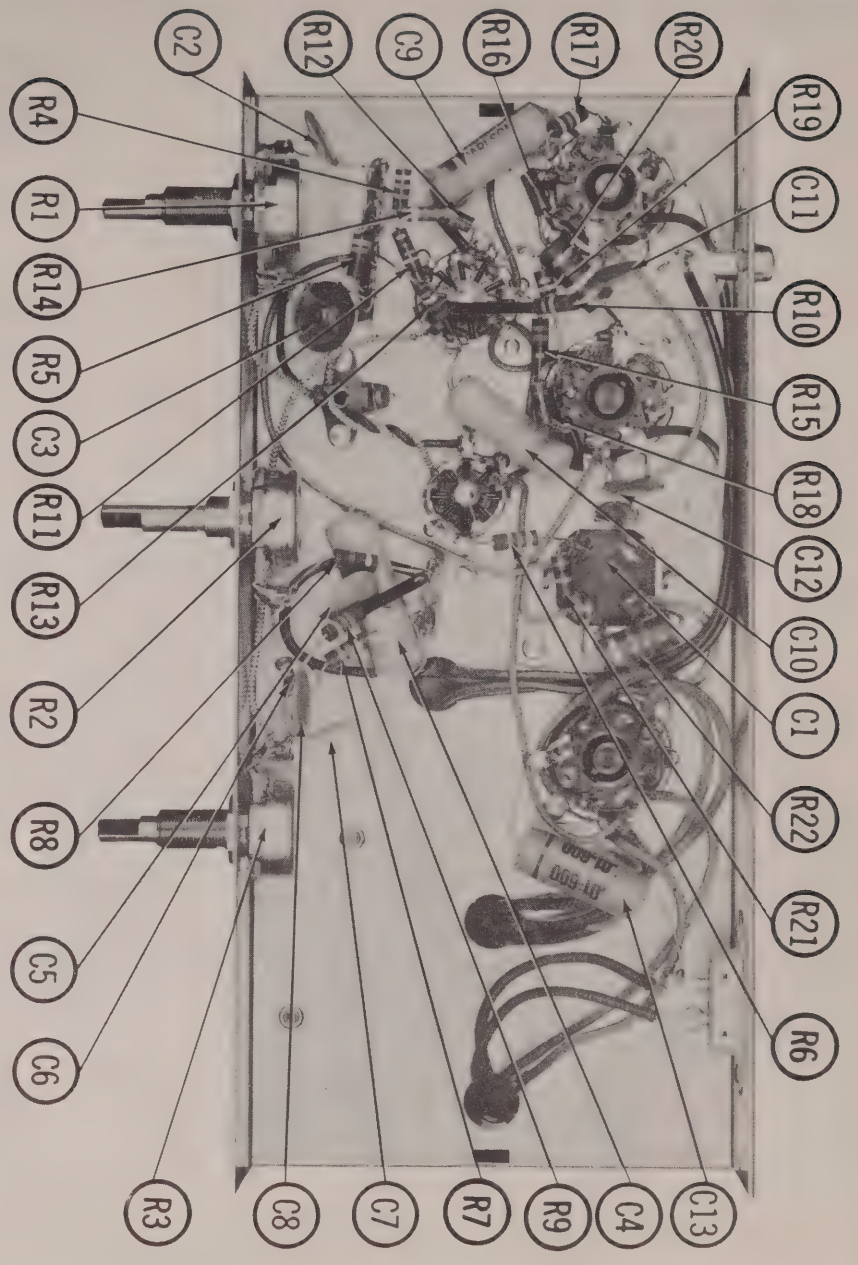
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Grille	130000-002	Model AF-631C
Grille	130000-003	Model AF-631K
Grille	130000-001	Model AF-631M
Knob	171000-138	Phono Control Knobs
Knob	134000-010	Amp. Control Knobs
Cabinet	108000-025	Cherry
Cabinet	108000-026	Limed Oak
Cabinet	108000-024	Mahogany
Back, Cabinet	101000-001	
Legs	166000-042	Black, for Limed Oak Models
Legs	166000-034	Cherry
Legs	166000-033	Mahogany

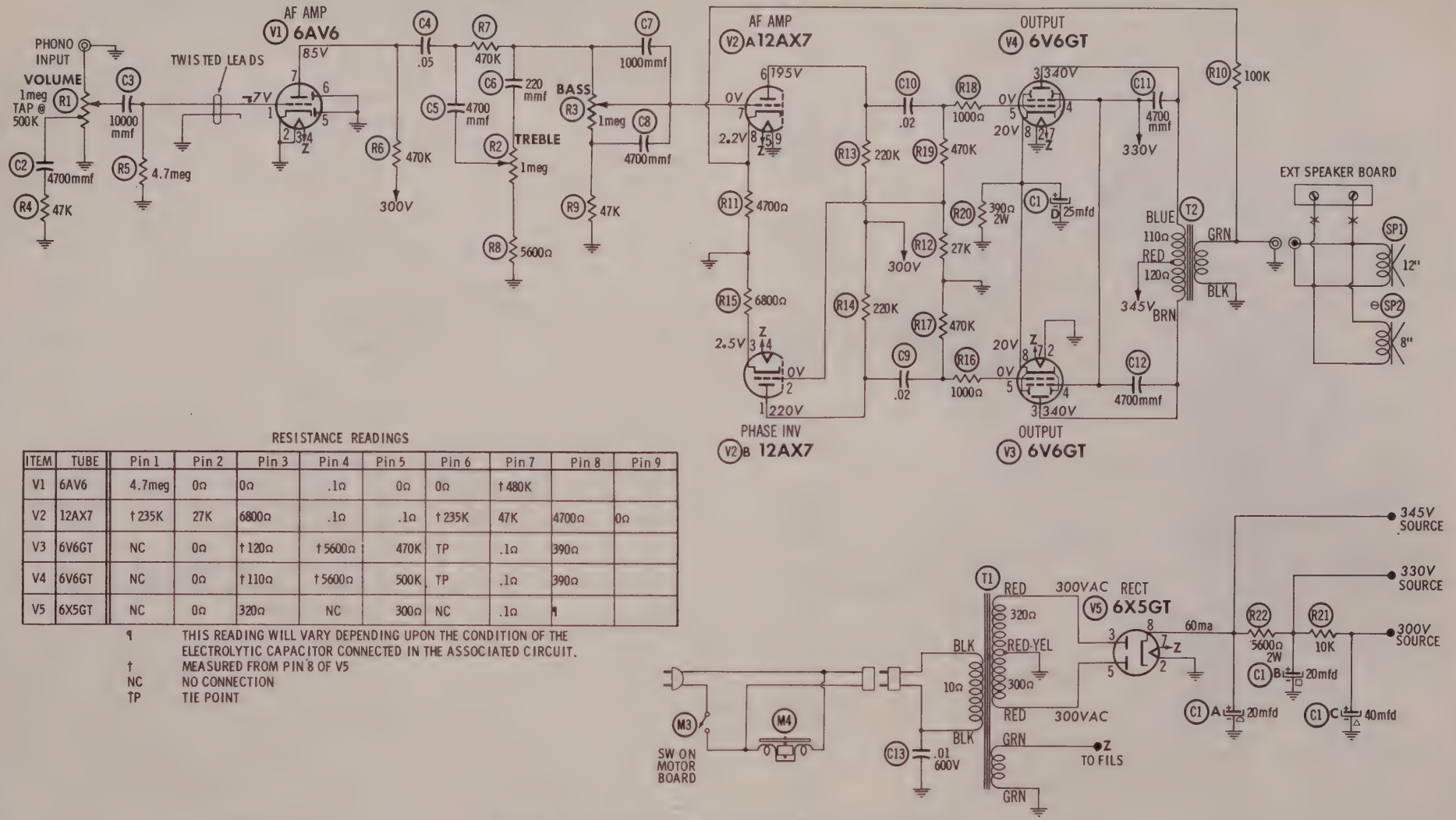
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW



STROMBERG-CARLSON
MODELS AF-631C, AF-631K, AF-631M



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AV6	4.7meg	0Ω	0Ω	.1Ω	0Ω	0Ω	†480K		
V2	12AX7	†235K	27K	6800Ω	.1Ω	.1Ω	†235K	47K	4700Ω	0Ω
V3	6V6GT	NC	0Ω	†120Ω	†5600Ω	470K	TP	.1Ω	390Ω	
V4	6V6GT	NC	0Ω	†110Ω	†5600Ω	500K	TP	.1Ω	390Ω	
V5	6X5GT	NC	0Ω	320Ω	NC	300Ω	NC	.1Ω	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
† MEASURED FROM PIN 8 OF V5
NC NO CONNECTION
TP TIE POINT

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PHOTOFACT* Folder

TRAV-LER MODELS 56C220, 56C221, 56C231, 56C232, 56C233, 56C240

TRAV-LER MODELS 56C220, 56C221, 56C231, 56C232, 56C233, 56C240

MODEL 56C240

TRAV-LER MODELS 56C220, 56C221, 56C231, 56C232, 56C233, 56C240

TRADE NAME	Trav-Ler Models 56C220, 56C221, 56C230, 56C231, 56C232, 56C233, 56C240
MANUFACTURER	Trav-Ler Radio & Tel. Corp., 571 W. Jackson Blvd., Chicago, Illinois
TYPE SET	AC Operated AM Receiver with Electric Clock
TUBES(Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles
RATING	.30 Amp. @117 Volts AC(28 Watts)
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B.- Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to Pin 7 (Grid) of 12BE6(V1) Low Side to B-	455KC (400∿ Mod)	Tuning Gang Fully Open	Across Voice Coil	A1, A2 A3, A4	Adjust for maximum output
2.	"	"	1620KC	"	"	A5	"
3.	"	"	600KC	600KC	"	A6	Adjust for maximum output while rocking gang. Repeat Steps 2 & 3.
4.		Loop	1400KC	Tune to 1400KC Signal	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

SET 422 FOLDER 16

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H671

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det. -AVC-AF Amp.	12AV6	

ITEM No.	USE	TYPE	NOTES
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Trav-Ler PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	70	150	EC-68	PRS150V8040	BBRD8415	WD220	TDLD-11	MTD-303	TVA-2462
B	40	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	Trav-Ler PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	220		CC-33	SI220	D6-221	LT6T22	UC-5322	5GA-T22	
C3	.05	400	PC-5	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C4	47		CC-12	N750-DI47	DTN-47	C10Q47U	NT-5447	5TCU-Q47	N750
C5	.05	400	PC-5	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C6	.022	400	PC-47	P488N-022	DD-203	CUB4S22	GEM-4122	4TM-S22	
C7	.05	400	PC-5	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C8	.1	400	PC-8	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	Trav-Ler PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	VC101	B-60	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2	5Ω	½(WW)	VC102					Dimmer Note 1

Note 1. Used only in Model 56C240

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Trav-Ler PART No.	NOTES
	OHMS	WATT		
R3	1meg		IR-12	
R4	47Ω		IR-4	
R5	22K		IR-45	
R6	120Ω		IR-155	

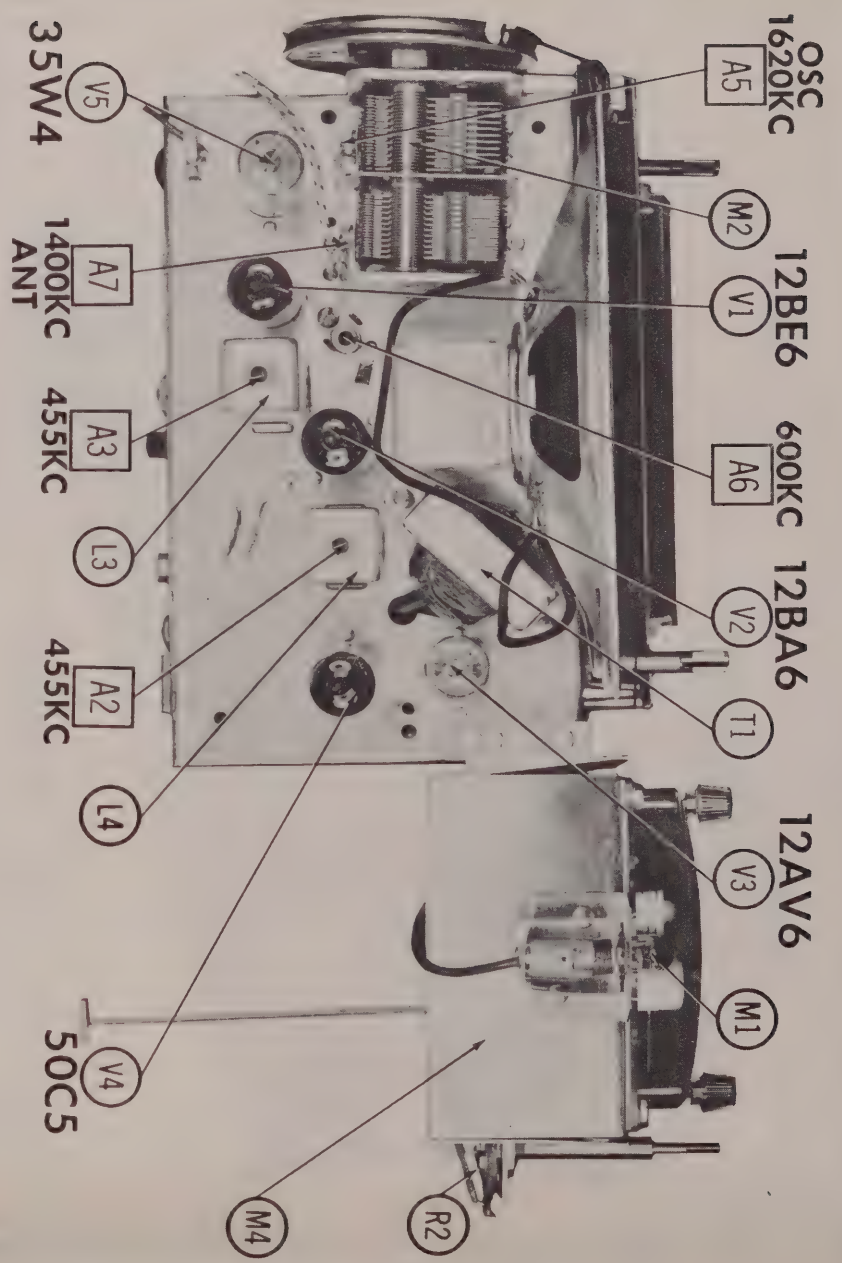
ITEM No.	RATING		Trav-Ler PART No.	NOTES
	OHMS	WATT		
R7	3.3meg		IR-23	
R8	150Ω		IR-98	
R9	1000Ω	1	IR-42	
R10	220K		IR-20	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		Trav-Ler PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Ant.	LL-48					Includes Cabinet back
L2	Osc. Coil	L0-27	14-1077	BC-393*	69-OSC*		
L3	Input IF	LI-19	16-6758	BC-352	12-C1	RF-1	
L4	Output IF	LI-19	16-6758	BC-353	12-C2	RF-2	

* Disregard capacity winding

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Trav-Ler PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2200Ω tap @ 130Ω (6%)	3-4Ω	AT-24①	Z1102	A-3031		A-3336	24S50A	A-16X	① Used in Models 56C230, 231, 232, 233, 240

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Trav-Ler PART No.	QUAM PART No.	
SP1	4"X6" 4"	PM	3-4Ω	SPK-55① SPK-56② (Includes T1)	46A15	① Used in Models: 56C230, 231, 232, 233, 240 ② Used in Models: 56C220, 221

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Trav-Ler PART No.	REPLACEMENT DATA	
K1	Audio Couplate	220mmf, 2000mmf 5000mmf, 250mmf 470K, 470K, 6.8meg	MC-19	Aerovox Centralab Cornell-Dubilier Sprague	PA-113-1 PC-150 116TM1 DT-4

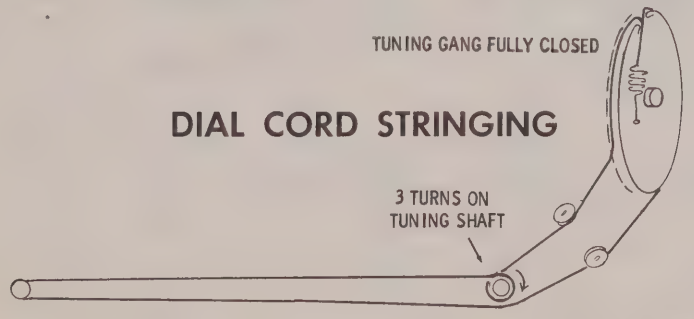
MISCELLANEOUS

ITEM No.	PART NAME	Trav-Ler PART No.	NOTES
M1	Dial Lamp	PB-5	#43 (Model 56C240 only)
M2	Tuning Cap.	GC-24	Two-Gang, AM, Ant 18-384mmf, Osc 18-166mmf
M3	Switch	SW-27	DPDT Slide Switch(Radio/ Phono) in Model 56C240 only
M4	Clock Ass'y	CK-7	Clock with On-Off, Radio, Alarm Switch

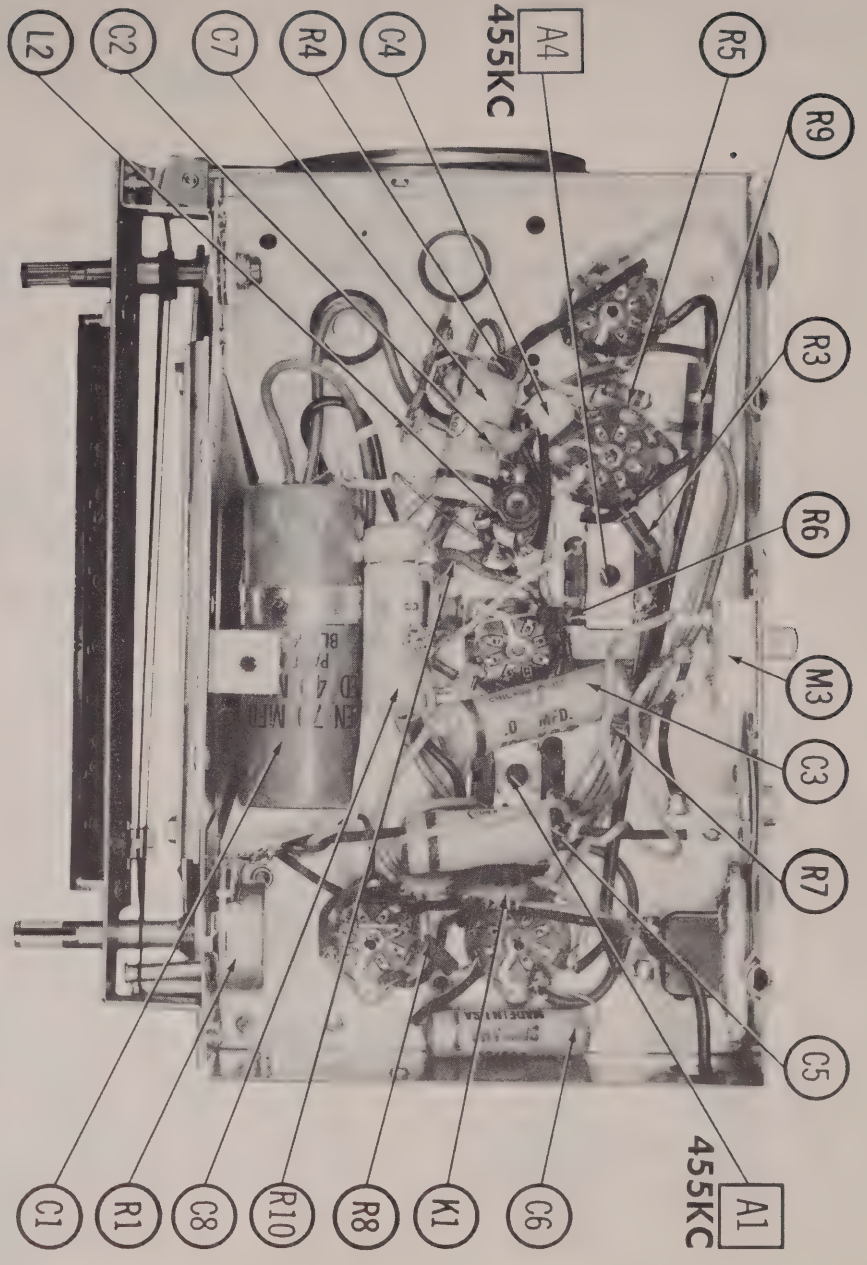
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

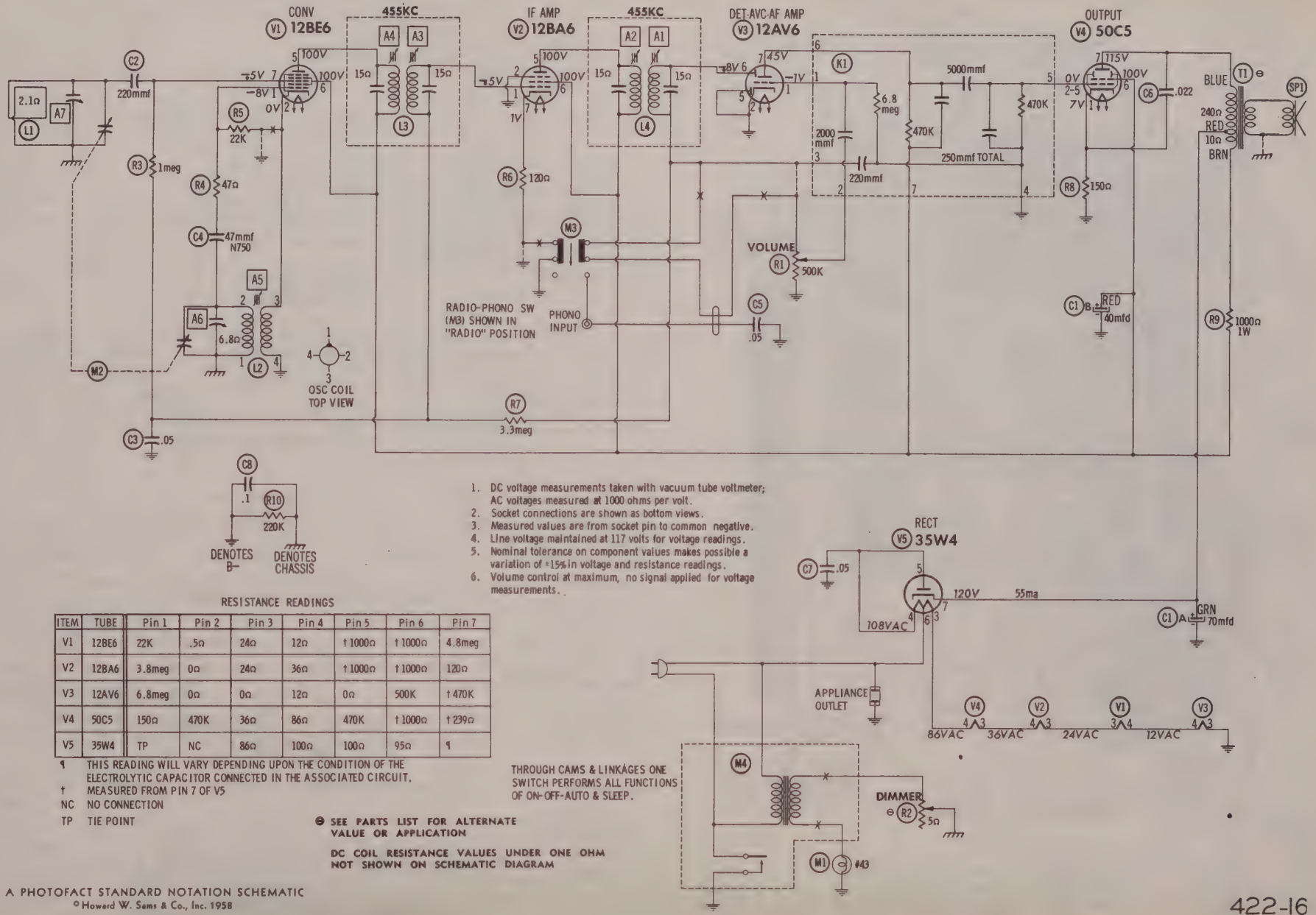


CHASSIS—BOTTOM VIEW



TRAV-LER MODELS 56C220, 56C221, 56C231, 56C232, 56C233, 56C240

TRAV-LER MODELS 56C220, 56C221, 56C231, 56C232, 56C233, 56C240



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.5Ω	24Ω	12Ω	† 1000Ω	† 1000Ω	4.8meg
V2	12BA6	3.8meg	0Ω	24Ω	36Ω	† 1000Ω	† 1000Ω	120Ω
V3	12AV6	6.8meg	0Ω	0Ω	12Ω	0Ω	500K	† 470K
V4	50C5	150Ω	470K	36Ω	86Ω	470K	† 1000Ω	† 239Ω
V5	35W4	TP	NC	86Ω	100Ω	100Ω	95Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
† MEASURED FROM PIN 7 OF V5
NC NO CONNECTION
TP TIE POINT

THROUGH CAMS & LINKAGES ONE SWITCH PERFORMS ALL FUNCTIONS OF ON-OFF-AUTO & SLEEP.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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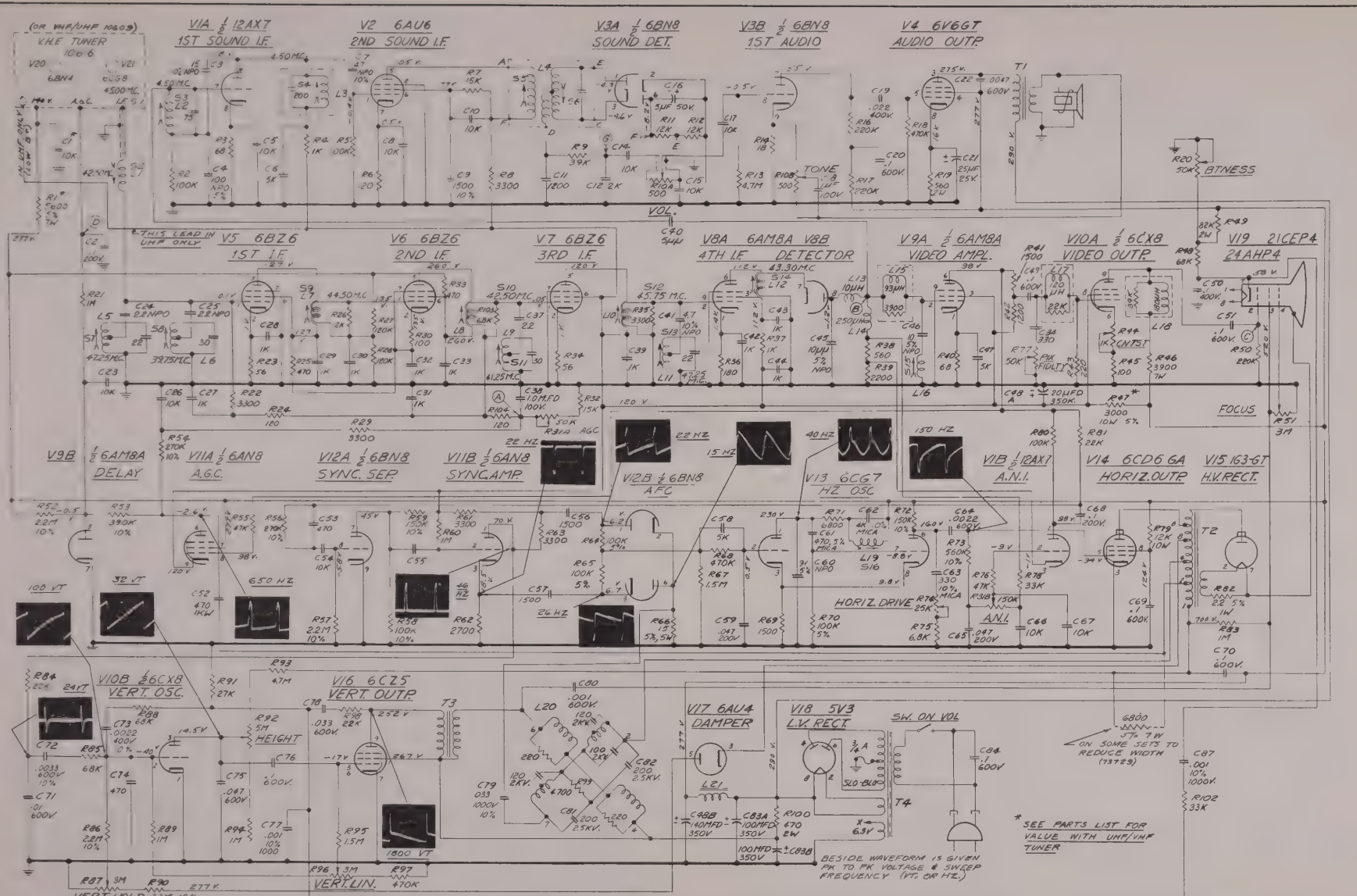
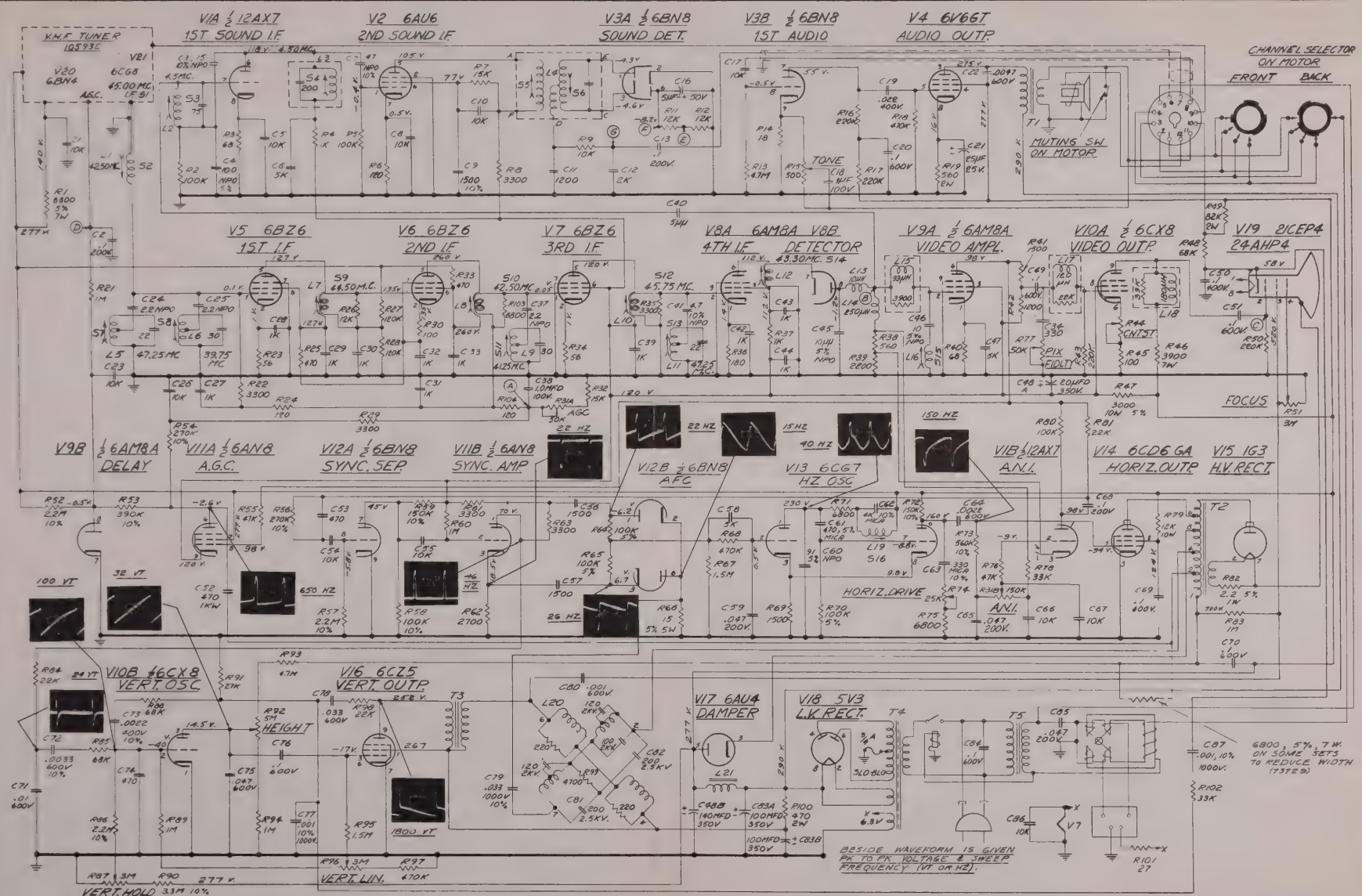


PACKARD BELL MODEL 21DT4 (Ch. 98D5)

Schematic Diagram Courtesy of Packard Bell Co.



PACKARD BELL MODELS 21DC9, 21DC10, 24DC5 (Ch. 98D4)

Schematic Diagram Courtesy of Packard Bell Co.

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PHOTOFACT* Folder with CIRCUITRACE*

ZENITH MODELS 500RD,
WD, YD (Ch. 8AT40Z2)

MODEL Royal 500RD

TRADE NAME	Zenith Models Royal 500RD, Royal 500WD, Royal 500YD (Chassis 8AT40Z2)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois
TYPE SET	Battery Operated Portable AM Transistorized Receiver
POWER SUPPLY	6 Volts DC
TUNING RANGE—BROADCAST	540-1600KC
RATING	7.8 MA @ 6 Volts DC (No Signal, Min. Volume) 9.5 MA @ 6 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455KC (400~ Mod.)	Tuning Gang Fully Open	Across Voice Coil	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.		Loop	1620KC	Tuning Gang Fully Open	Across Voice Coil	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	535KC	Tuning Gang Fully Closed	Across Voice Coil	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat Steps 2 and 3
4.		Loop	1260KC	Tune to 1260KC Signal	Across Voice Coil	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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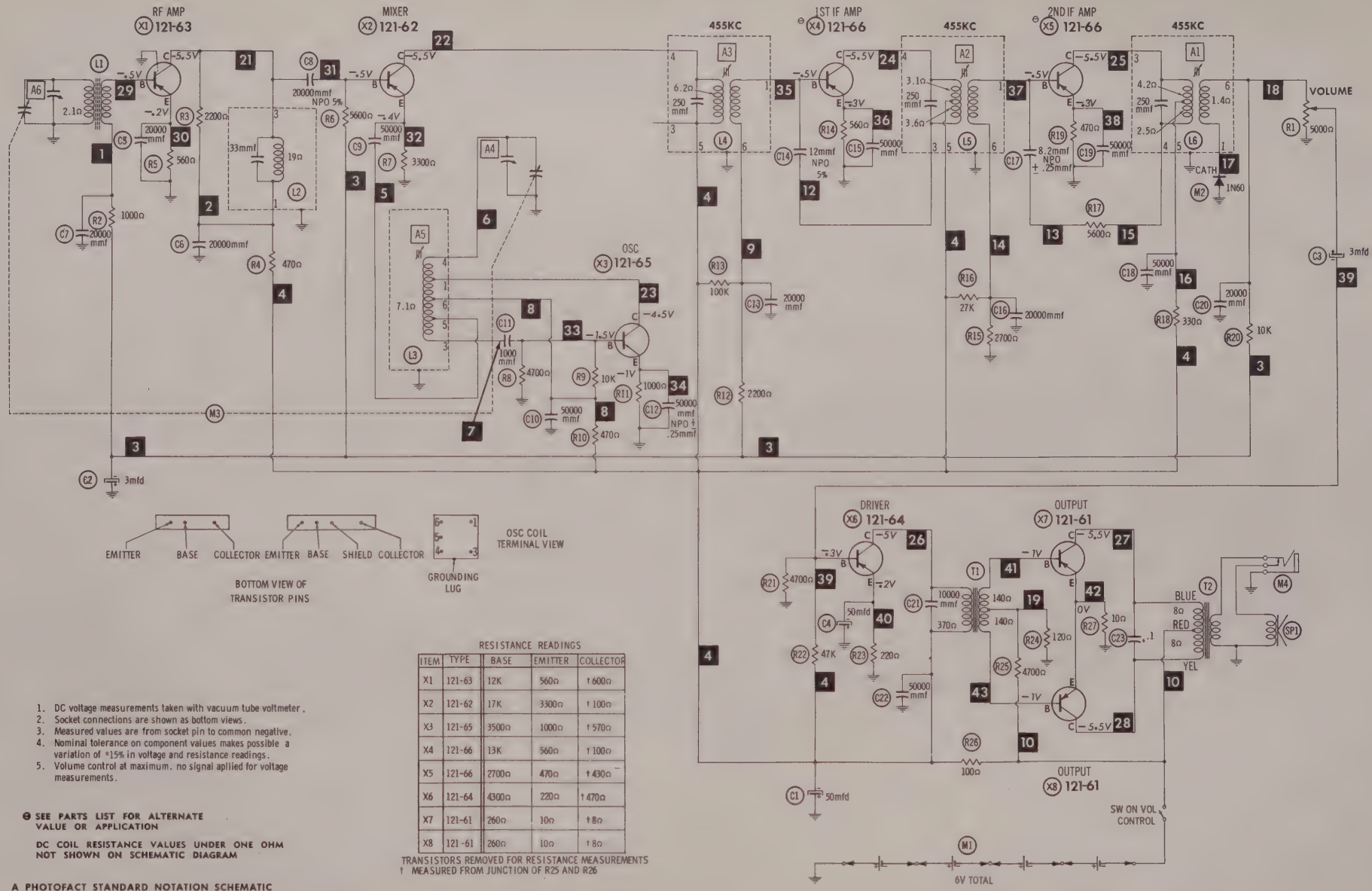
the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

SET 422 FOLDER 17



RESISTANCE READINGS

ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1	121-63	12K	560Ω	†600Ω
X2	121-62	17K	3300Ω	†100Ω
X3	121-65	3500Ω	1000Ω	†570Ω
X4	121-66	13K	560Ω	†100Ω
X5	121-66	2700Ω	470Ω	†430Ω
X6	121-64	4300Ω	220Ω	†470Ω
X7	121-61	260Ω	10Ω	†8Ω
X8	121-61	260Ω	10Ω	†8Ω

TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS
† MEASURED FROM JUNCTION OF R25 AND R26

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

❸ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE®

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422-17

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	121-63	RF Amplifier		2N544	2N487		PNP
X2	121-62	Mixer		2N411	2N486	2N141	PNP
X3	121-65	Oscillator		2N409	2N485	2N409	PNP
X4	121-66	1st IF Amplifier		2N409	2N483		PNP Note 1
X5	121-66	2nd IF Amplifier		2N409	2N483		PNP Note 2
X6	121-64	Driver		2N407	2N362	2N407	PNP
X7	121-61	Output		2N407	2N632	2N407	PNP
X8	121-61	Output		2N407	2N632	2N407	PNP

Note 1. Type 121-73 Used in Chassis with red dot code
Note 2. Type 121-74 Used in Chassis with red dot code

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	50	6	22-2726	PWE6050	NL50-6	TT6X50	ML50-6	MQ-650	TE-1100
C2	3	12	22-2884	XPP-12003	NL3-10	TT12X2	ML2-15		TE-1122
C3	3	12	22-2884	XPP-12003	NL3-10	TT12X2	ML2-15		TE-1122
C4	50	6	22-2726	PWE6050	NL50-6	TT6X50	ML50-6	MQ-650	TE-1100

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	20000		22-3033		DA-203				
C6	20000		22-2885		DA-203				
C7	20000		22-3033		DA-203				
C8	20000		22-3033		DA-203				
C9	50000		22-3034		DA-503				
C10	50000		22-3034		DA-503				
C11	1000		22-2729	BPD-001	DD-102	BYA10D1	DC521	5HK-D1	
C12	50000		22-3034		DA-503				
C13	20000		22-3033		DA-203				
C14	12		22-3035						NPO 5%
C15	50000		22-2728		DA-503				
C16	20000		22-2885		DA-203				
C17	8.2		22-2481						NPO ±.25mmf
C18	50000		22-2728		DA-503				
C19	50000		22-2728		DA-503				
C20	20000		22-2885		DA-203				
C21	10000		22-3010		DD6-103				
C22	50000		22-2728		DA-503				
C23	.1	50	22-2998						

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/4	63-3693					Volume & Switch

PRINTED BOARD

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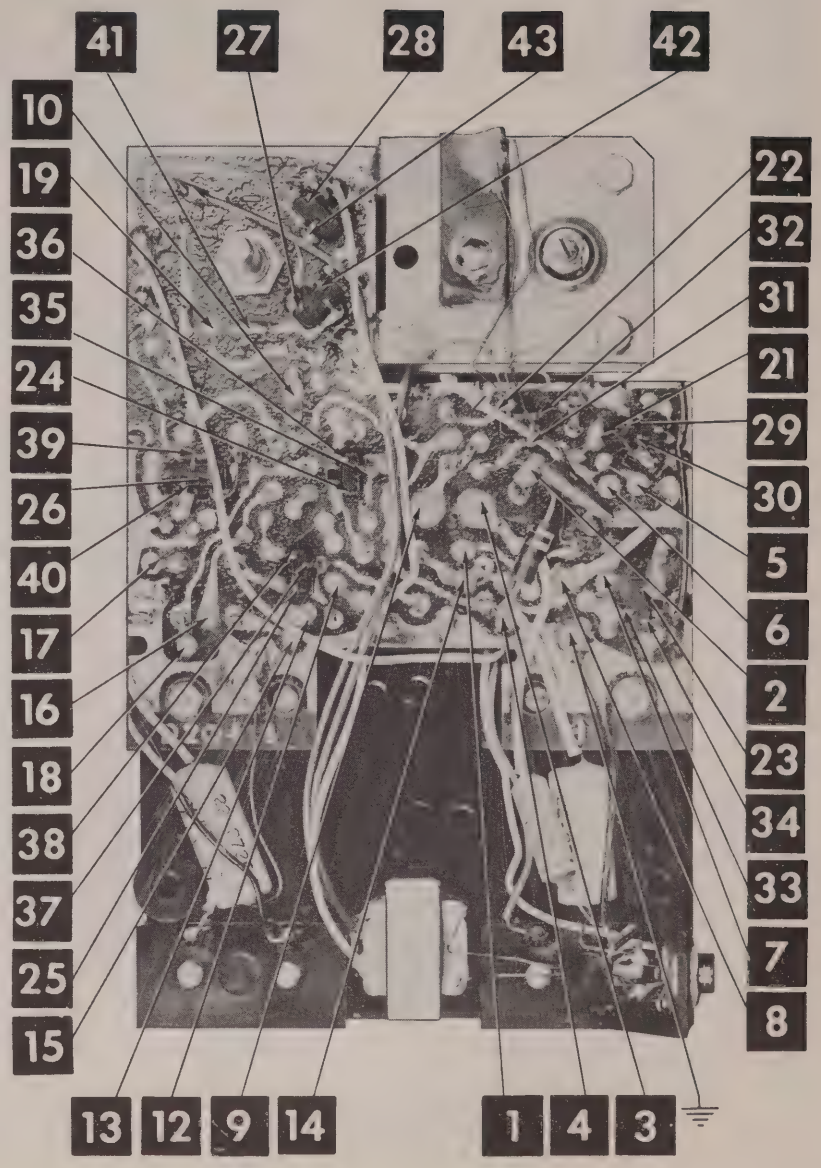
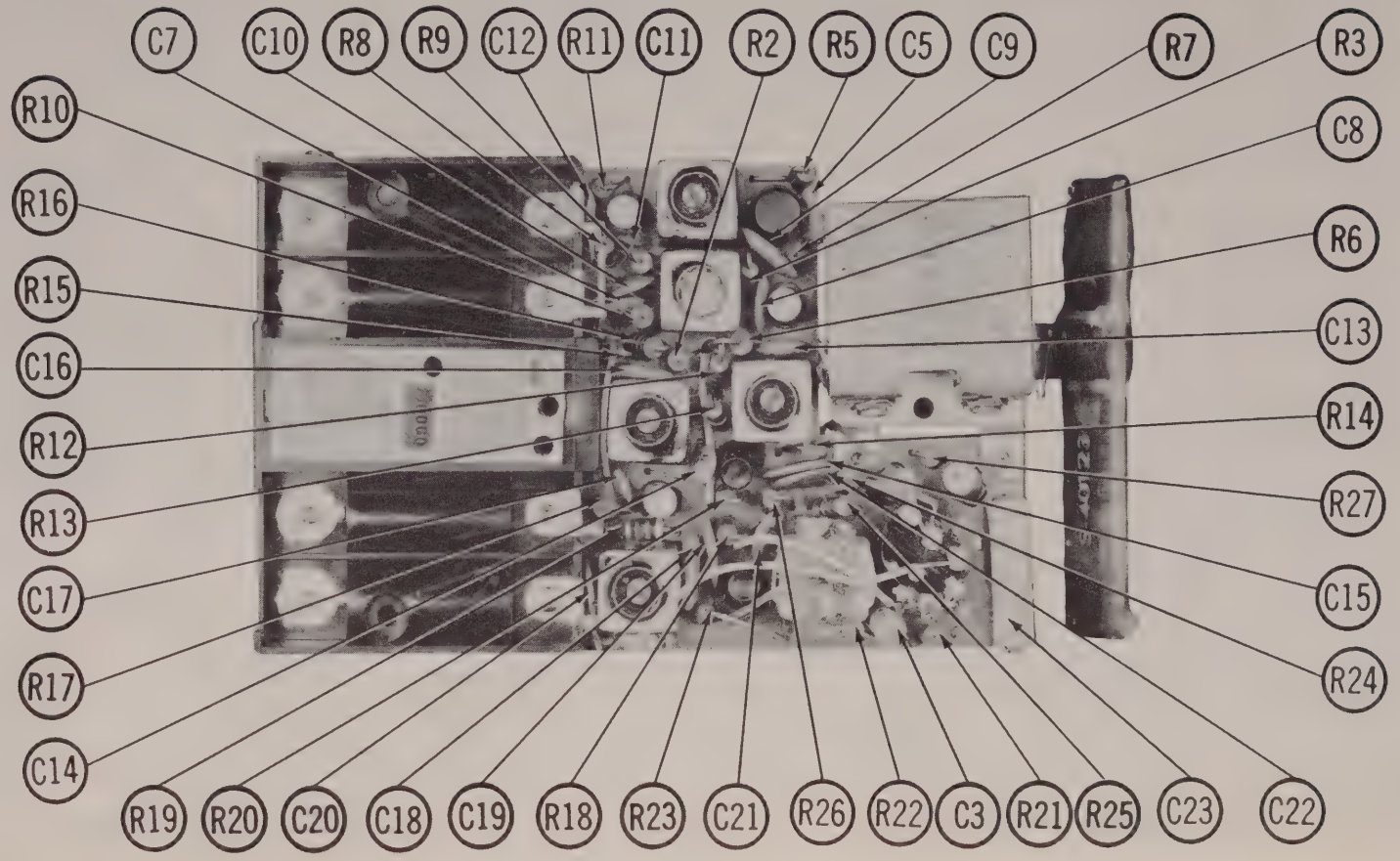
*TRADE MARK





CHASSIS TOP VIEW - RESISTOR & CAPACITOR IDENT

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	ZENITH PART No.	NOTES
R2	1000Ω		63-1786	
R3	2200Ω		63-3799	
R4	470Ω		63-1772	
R5	560Ω		63-1775	
R6	5600Ω		63-1817	
R7	3300Ω		63-3806	
R8	4700Ω		63-1813	
R9	10K		63-1827	
R10	470Ω		63-3772	
R11	1000Ω		63-1786	
R12	2200Ω		63-3799	
R13	100K		63-1869	
R14	560Ω		63-1775	
R15	2700Ω		63-1803	
R16	27K		63-1845	
R17	5600Ω		63-1817	
R18	330Ω		63-1765	
R19	470Ω		63-1772	
R20	10K		63-1827	
R21	4700Ω		63-1813	
R22	47K		63-1855	
R23	220Ω		63-1758	
R24	120Ω		63-1747	
R25	4700Ω		63-1813	
R26	100Ω		63-1744	
R27	10Ω		63-1701	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA ZENITH PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loop Stick	S-40123					
L2	RF Coil	95-1583					
L3	Osc. Coil	95-1589					
L4	1st IF	95-1585					
L5	2nd IF	95-1584					
L6	3rd IF	95-1586					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO PRI.	TURNS RATIO SEC.	REPLACEMENT DATA ZENITH PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	1	: 1	95-1518						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA ZENITH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	425Ω CT	14Ω	95-1519					TR-18		

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA ZENITH PART No.	QUAM PART No.	NOTES
SP1	2 3/4"	PM	14Ω	49-840		

BATTERIES

ITEM No.	VOLTAGE	ZENITH PART No.	REPLACEMENT DATA BURGESS "A"	BURGESS "B"	EVEREADY "A"	EVEREADY "B"	MALLORY "A"	MALLORY "B"	NOTES
M1	6V	Z-8①		Z①		915①		M-15R①	① 4 Used

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA ZENITH PART No.	CBS PART No.	SYLVANIA PART No.	NOTES
M2		103-19	IN60	1N295	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M3	Tuning Cap	22-3011	2 Gang (Osc. 12-93mmf)
M4	Jack	44-34	Earphone, Miniature
	Printed Board	D204-8	

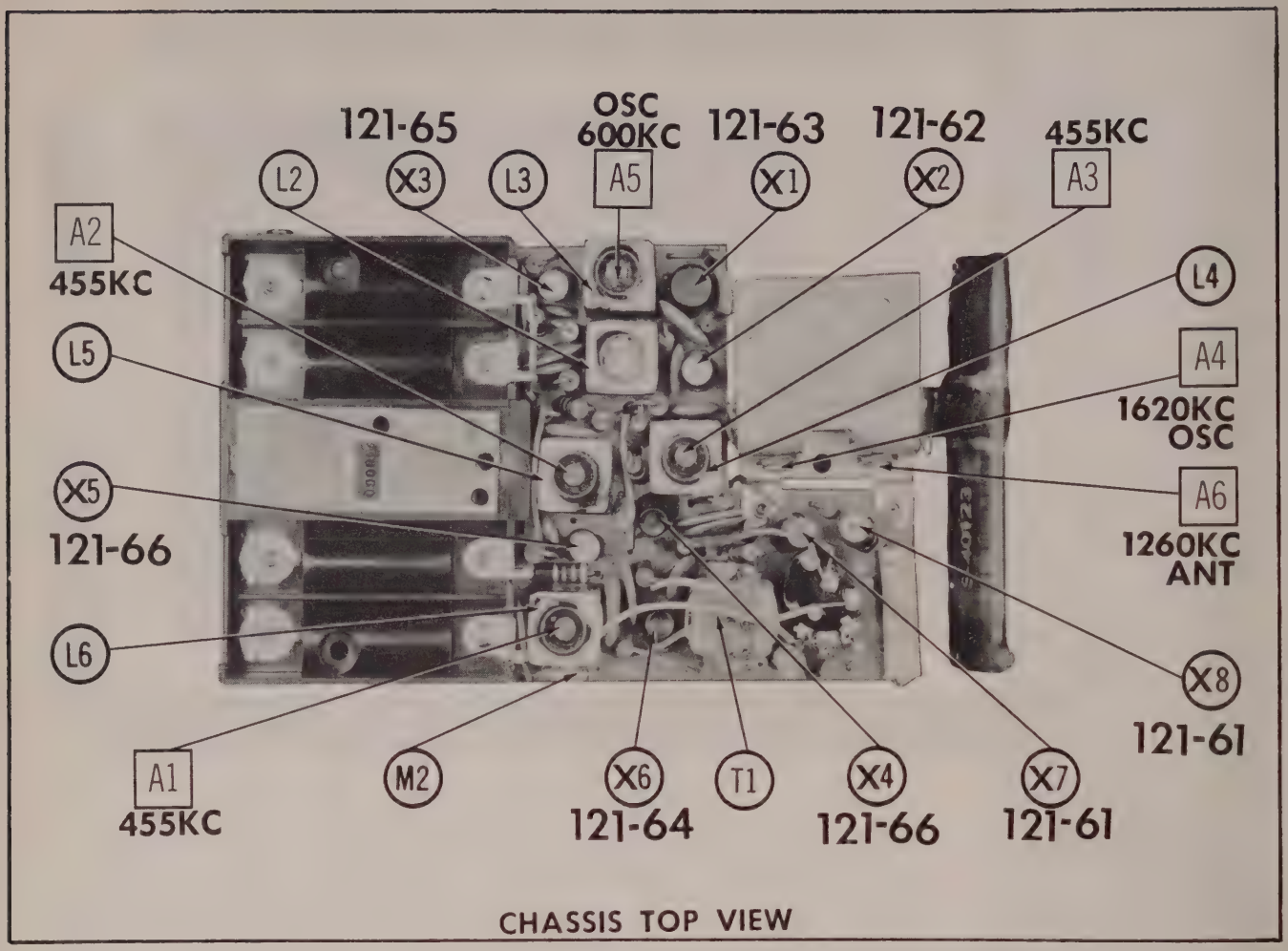
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

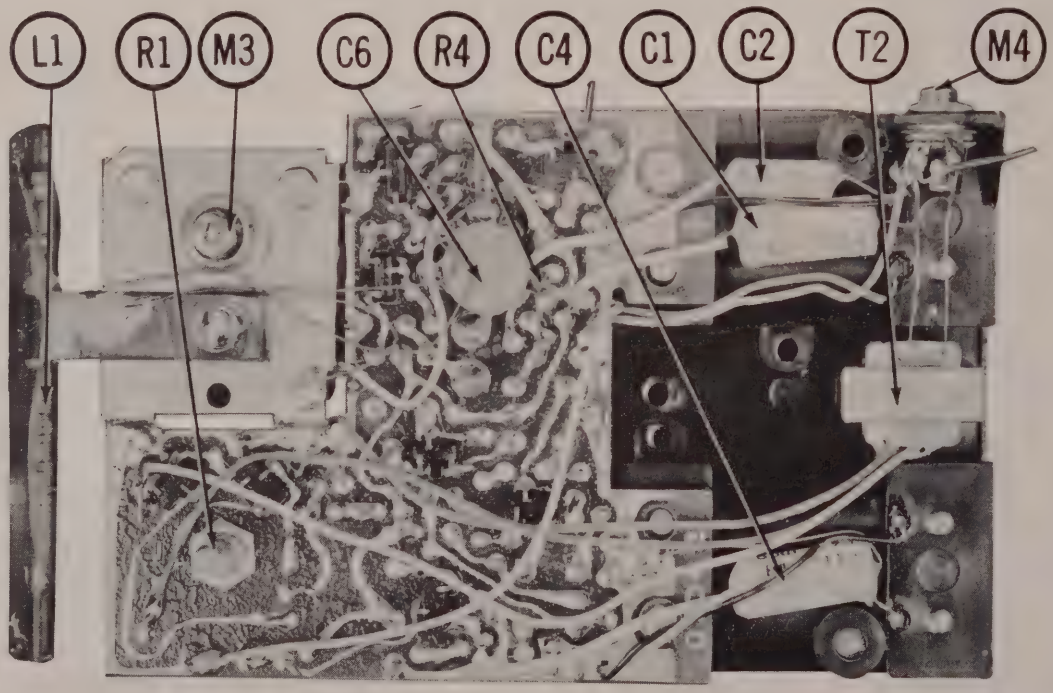
NAME	PART NO.	DESCRIPTION
Knob	46-1672	Tuning, Model Royal 500RD
Knob	46-1671	Tuning, Model Royal 500YD
Knob	46-1692	Tuning, Model Royal 500WD
Knob	S-42960	On-Off-Volume, Model Royal 500RD
Knob	S-42959	On-Off-Volume, Model Royal 500YD
Knob	S-42961	On-Off-Volume, Model Royal 500WD
Dial Knob Assy.	S-43023	
Cabinet (Front)	14-2338	Model Royal 500RD
Cabinet (Front)	14-2337	Model Royal 500YD
Cabinet (Front)	14-2339	Model Royal 500WD
Cabinet (Rear)	14-2343	Model Royal 500RD
Cabinet (Rear)	14-2342	Model Royal 500YD
Cabinet (Rear)	14-2344	Model Royal 500WD
Grille	138-167	Cabinet
Handle	36-185	Cabinet
Cover	24-886	Battery, Model Royal 500RD
Cover	24-885	Battery, Model Royal 500YD
Cover	24-887	Battery, Model Royal 500WD

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors



CHASSIS TOP VIEW



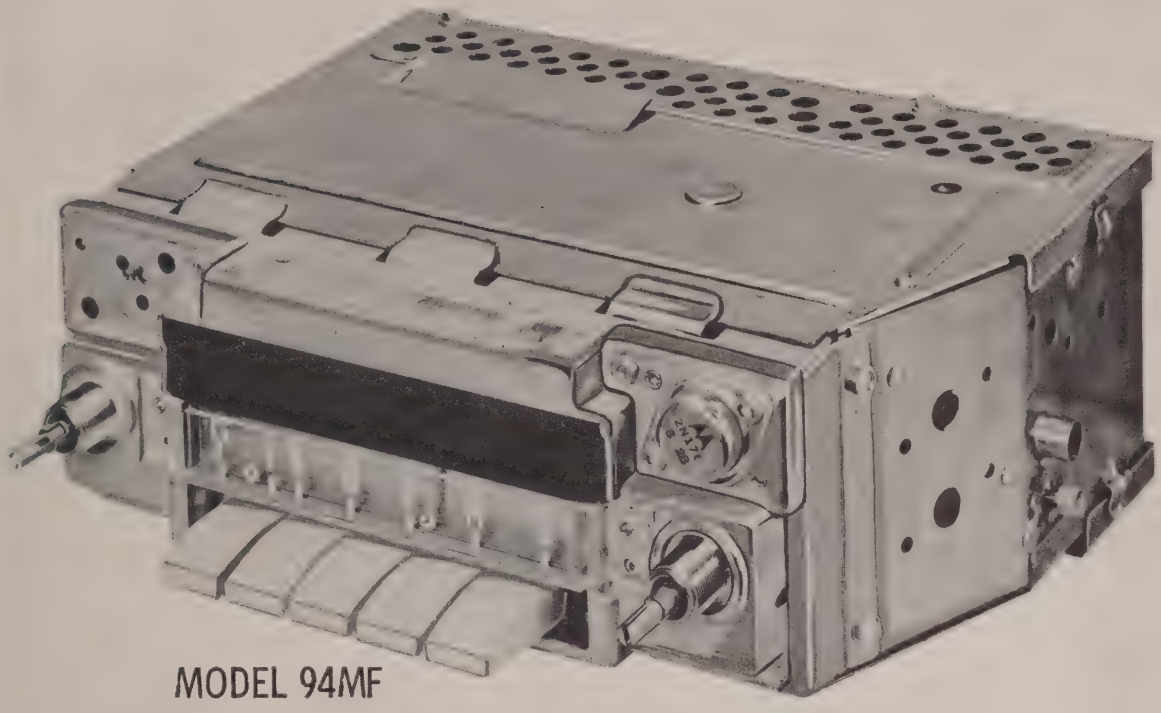
CHASSIS BOTTOM VIEW

PHOTOFACT* Folder with CIRCUITRACE*

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

FORD MODELS 94MF (B9FA-18806-C), 94MFM (B9FA-18805-E)

FORD MODELS 94MF (B9FA-18806-C), 94MFM (B9FA-18805-E)



MODEL 94MF

FORD MODELS 94MF (B9FA-18806-C), 94MFM (B9FA-18805-E)

TRADE NAME	Ford Models 94MF (B9FA-18806-C), 94MFM (B9FA-18805-E) For 1959 Ford Automobiles
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	Battery Operated 4 Tube Custom Built AM Automobile Receiver With Transistorized Output (Model 94MFM Does Not Have Pushbutton Tuning)
POWER SUPPLY	12 Volt Storage Battery RATING 1 Amp. @12.6 Volts DC
TUNING RANGE-BROADCAST	540-1610KC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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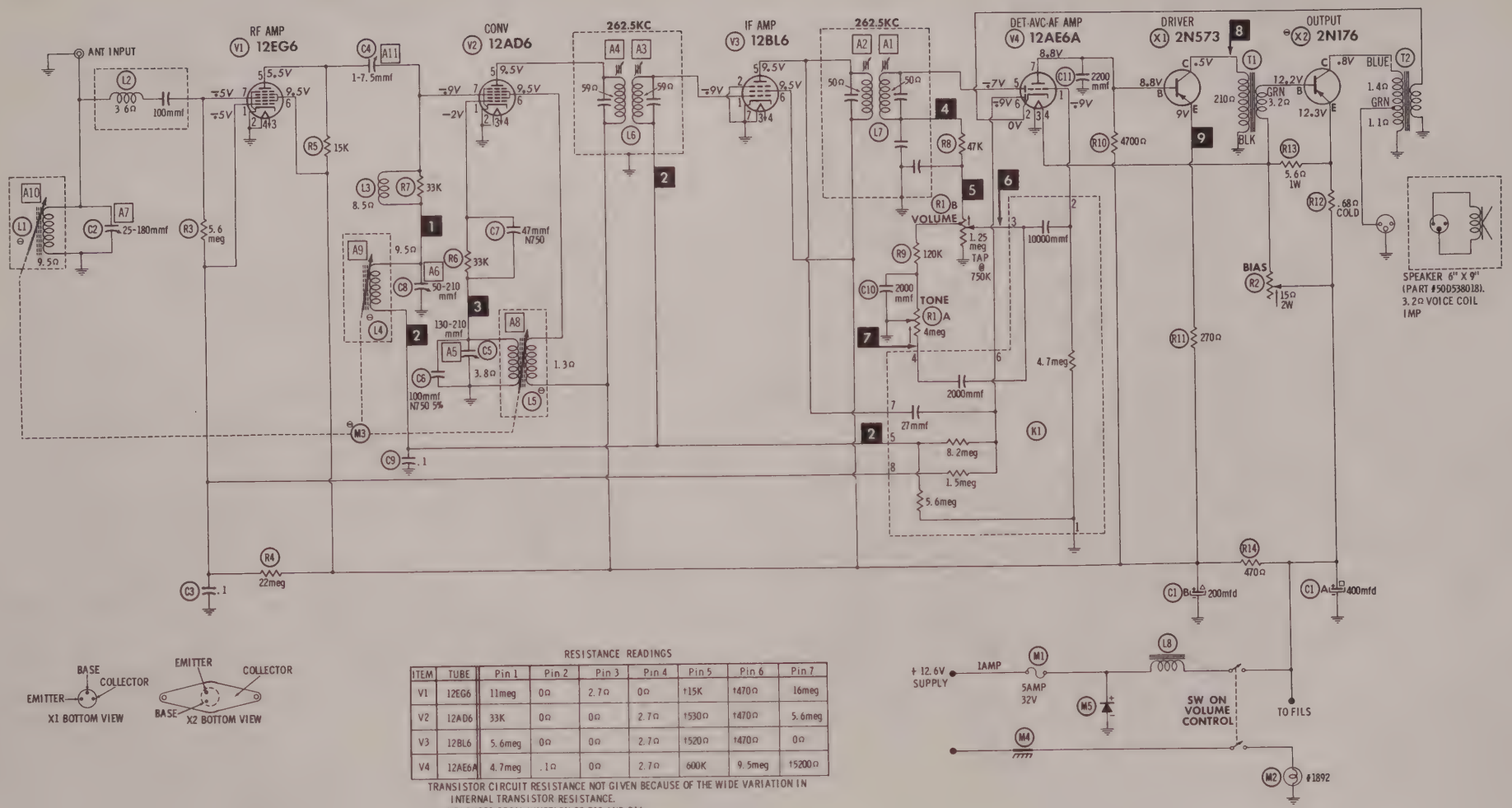

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12EG6	11meg	0Ω	2.7Ω	0Ω	†15K	†470Ω	16meg
V2	12AD6	33K	0Ω	0Ω	2.7Ω	†530Ω	†470Ω	5.6meg
V3	12BL6	5.6meg	0Ω	0Ω	2.7Ω	†520Ω	†470Ω	0Ω
V4	12AE6A	4.7meg	.1Ω	0Ω	2.7Ω	600K	9.5meg	†5200Ω

TRANSISTOR CIRCUIT RESISTANCE NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.
† MEASURED FROM JUNCTION OF R12 AND R14.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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FORD MODELS 94MF (B9FA-18806-C), 94MFM (B9FA-18805-E)

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12EG6	
V2	Converter	12AD6	
V3	IF Amplifier	12BL6	
V4	Det.-AVC-AF Amp.	12AE6A	

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N573	Driver			2N573		PNP
X2	2N176*	Output	2N155	2N176		2N176	PNP Note 1

Note 1. When replacing, apply DC-4 grease (Motorola Part #11M490487) or equivalent to both side of the insulator.
* Model 94MFM may use MN-29 in this application. Replace with 2N176.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	■400	16	23B561100	AFH2-02-75				PCLS-2173*	
B	▲200								

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	25-180			20B534809						
C3	.1	100		8K124891	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C4	1-7.5			21A561322		829-7				
C5	130-210			20B561323						
C6	100		N750 5%	21K561978		DTN-100		CN7-310	5TCU-T1S 5%*	
C7	47		N750	21K561564	N750-DI 47	DTN-47	C10Q47U	CN7-447	5TCU-Q47	
C8	50-260			20K561324						
C9	.1	200		8K129314	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C10	2000			21R121106	BPD-002	DD-202	BYA10D2	B-220	5HK-D2	
C11	2200			21K562182	BPD-0022	DD-222	BYA10D22	B-222	5HK-D22	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	4meg	1/2	18B561597		RTV-676C			Tone
B	1.25meg	1/2			Not Req.			Volume, Tap@750K
C	Switch				Not Req.			
R2	15Ω	2WW	18K561139					Bias

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R3	5.6meg		6K124761	
R4	22meg		6R488158	
R5	15K		6R2119	
R6	33K		6K121704	
R7	33K		6K121704	
R8	47K		6K121687	
R9	120K		6K127540	
R10	4700Ω		6R6039	
R11	270Ω		6K121303	
R12	.68Ω cold		17A561516	
R13	5.6Ω	1	17K739323	
R14	470Ω		6K127633	

PRINTED BOARD

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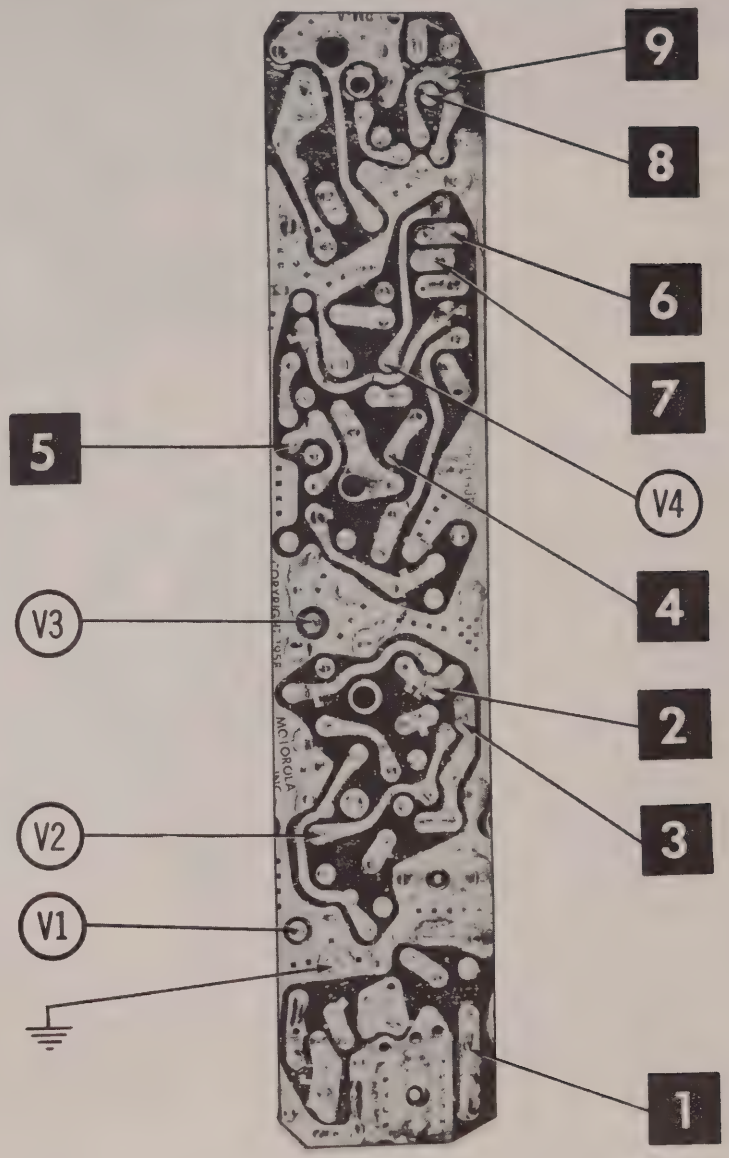
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA
K1	Det.-AVC-AF Amp. Net.	27mmf, 2000mmf, 10000mmf, 1.5meg, 4.7meg, 5.6meg, 8.2meg	51B561099	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Tuning Coil	24C536308 ①					Includes 100mmf Cap.
L2	Ant. Coil	24K560921					
L3	IM Age Trap	24K561331					
L4	RF Coil	24C536308 ①					
L5	Osc. Coil	24B536300 ①					
L6	Input IF	24K561404	16-6752	BC-344	12-H1	RF-3	
L7	Output IF	24K561403	16-6754	BC-346	12-H6		

① Part of M3, may be ordered as an assembly with mounting plate (Part #1V539639).

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L8	1A	.4Ω	.010HY	25K561571						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	20	1	25C561438						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	20Ω Tap ⓐ 3-4Ω	5Ω	25C561437							

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	1AG	5A 32V	65R122345	9K539681	301005. (1AG 5A 32V)	155004	SFE4	HAF

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Lamp	65R538410	#1892
M3	Tuner	77E561245	AT-250, Complete (Model 94MF)
	Tuner	77K561960	MAT-266, Complete (Model 94MFM)
M4	Spark Plate	64A530176	
M5	Spark Plate	48K539953	Selenium, Use #43A539954 Bushing, 5K124848 Eyelet, 4A542137 Cup Washer For Mounting

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	36K561757	Tuning, Volume-On-Off
Knob	36B539476	Tone, Dummy
Push Button	38K561745	5 Used (Model 94MF only)
Cover	15C561060	Top
Cover	15K561054	Bottom
Pointer	1A538977	
Dial Scale	34K561035	
Dial Scale	64K561036	Background

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Set Tone to treble.
"A" lead must be connected to positive side of power supply.
Suggested Alignment Tools:
A1 thru A4.....GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545
A5, A6, A11..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537
A8, A9, A10..... See Fig. 2.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to antenna receptacle. Low side to chassis.	262.5KC (400% Mod.)	High freq. end of dial.	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	Fig. 1	Thru dummy to antenna receptacle.	1610KC	"	"	A5, A6, A7	"
	Step 3 is not necessary unless tuner has been repaired or tampered with. If necessary, back tuning cores (A8, A9, A10) 1 3/8" out of coils. (Alignment tool similar to Fig. 2 may be used.) Repeat step 2.						
3.	Fig. 1	Thru dummy to antenna receptacle.	1020KC	Tune to 1020KC signal	Across voice coil	A8, A9, A10	Adjust for maximum output. Repeat steps 2 & 3 until no further improvement is noted. Cement cores in place.
4.	"	"	600KC @ 5 micro-volts	Tune to 600KC signal	"	All	Adjust for 1.79 volts output.
5.	With radio installed in car and antenna fully extended, tune in a weak station near 1200KC and adjust A7 for maximum output.						

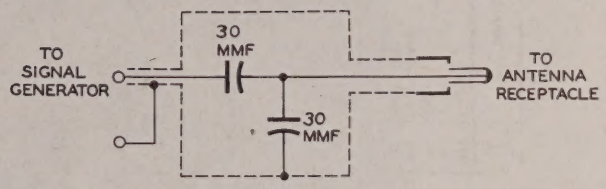


FIG. 1

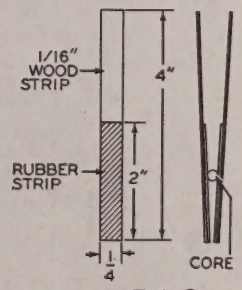
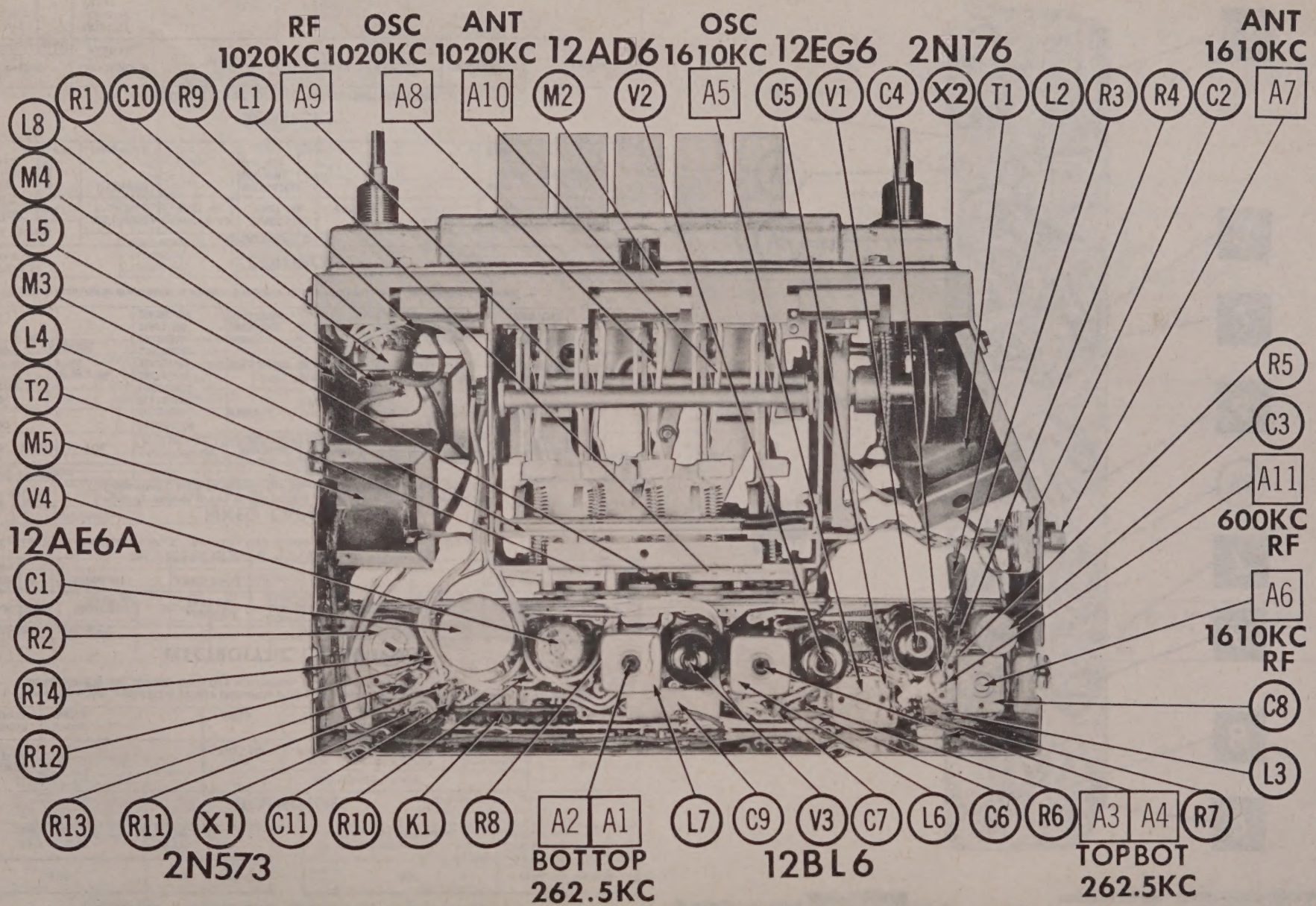


FIG. 2

PUSHBUTTON ADJUSTMENT

1. Pull pushbutton out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.



CHASSIS - TOP VIEW